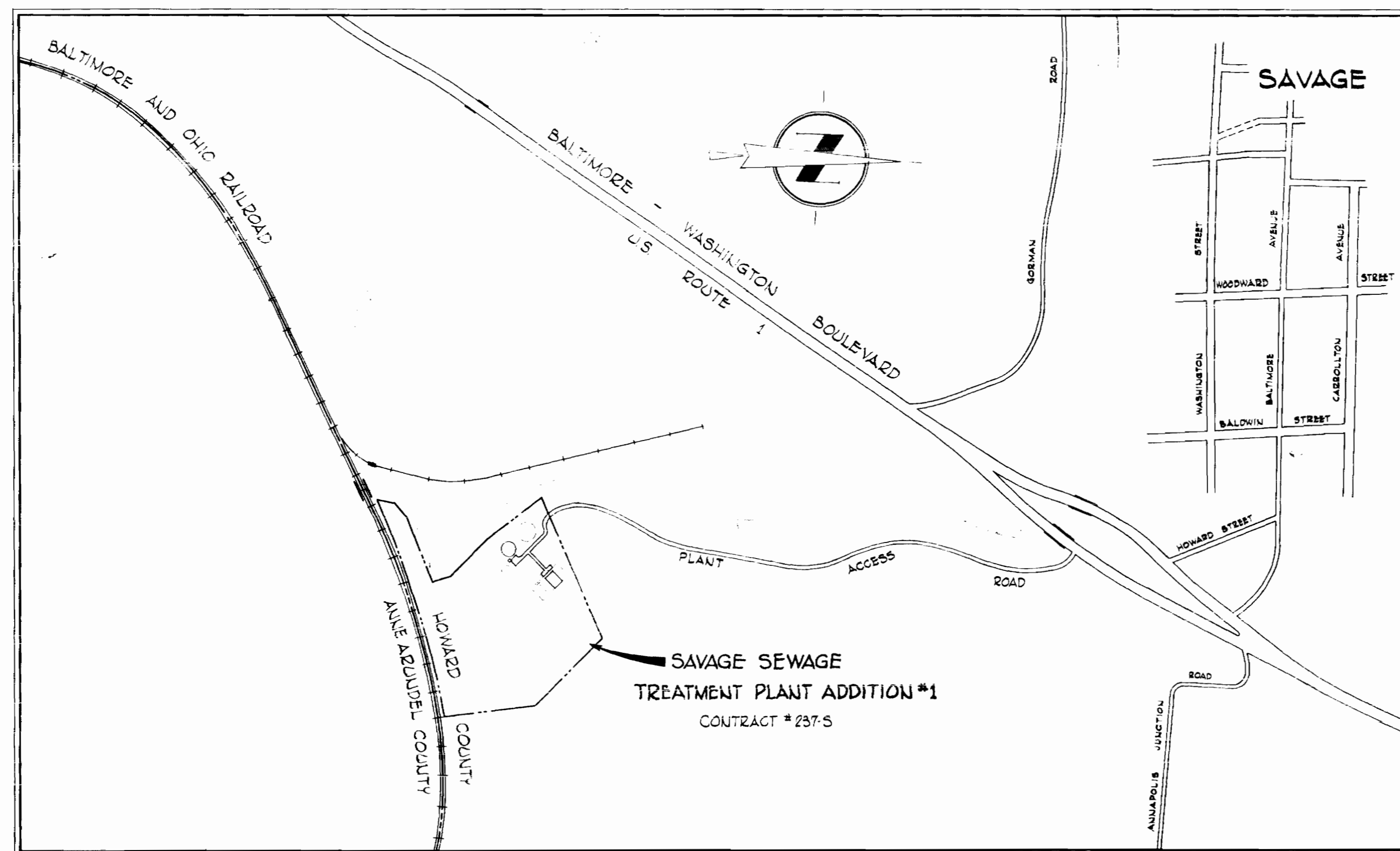


CONTRACT 237-S

SAVAGE SEWAGE

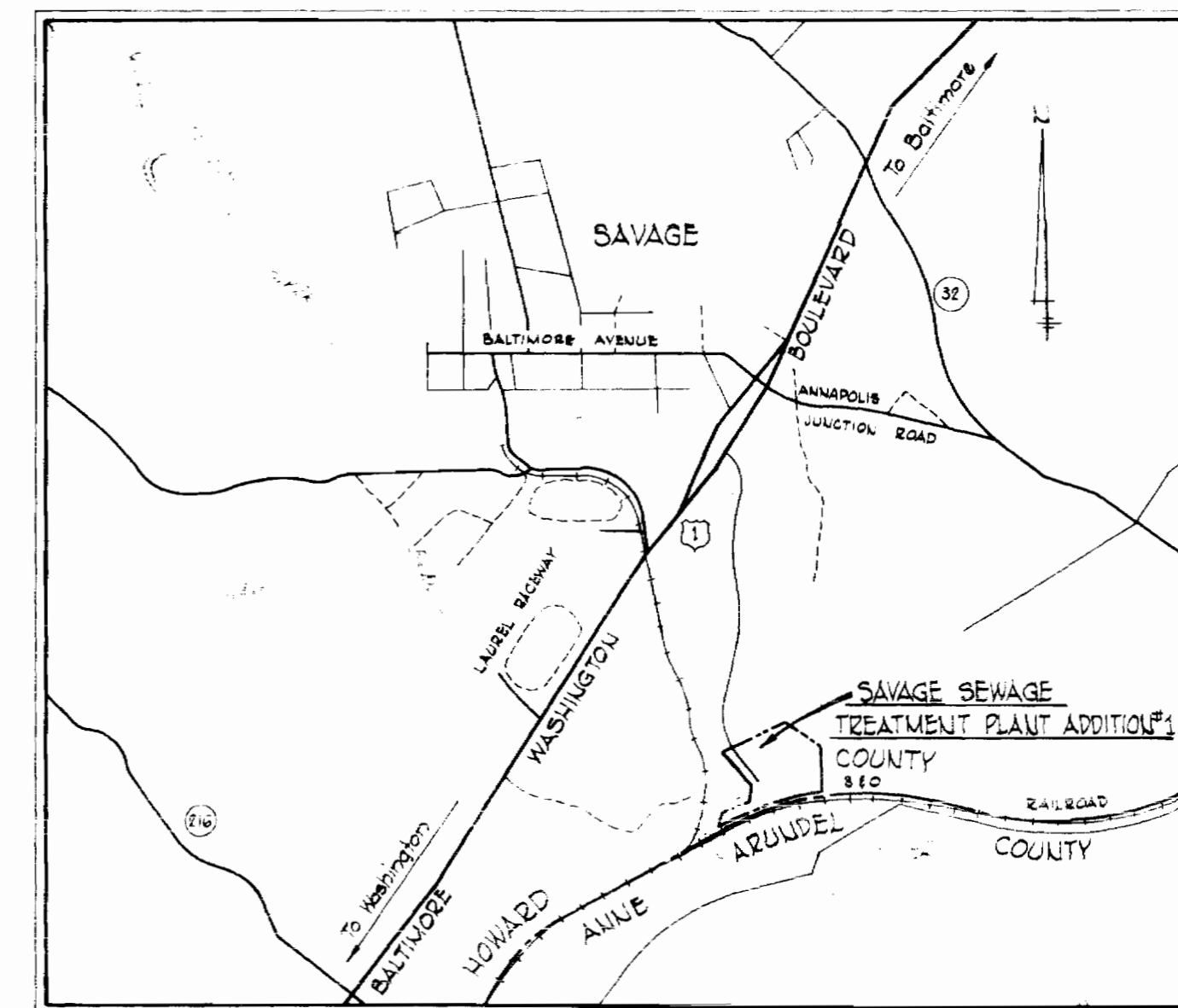
TREATMENT PLANT ADDITION NO. 1

HOWARD COUNTY DEPT. OF PUBLIC WORKS



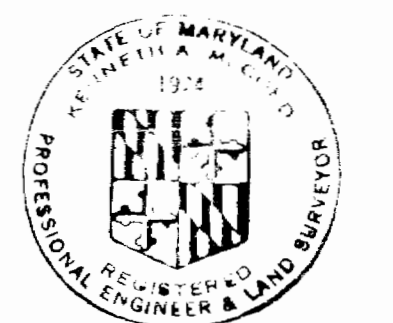
LOCATION MAP

Scale: 1"=600'



VICINITY MAP

Scale: 1"=2000'



Kenneth A. Lind

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
4-11-69 *W. O. Gilbert*
DATE CHIEF ENGINEER

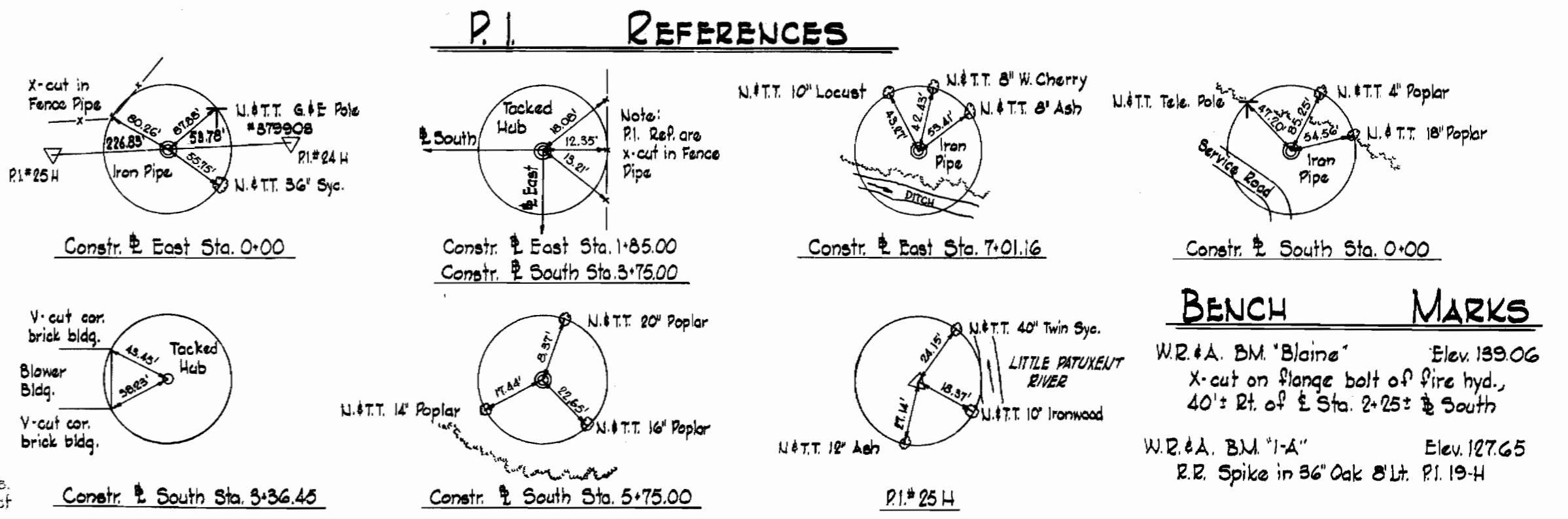
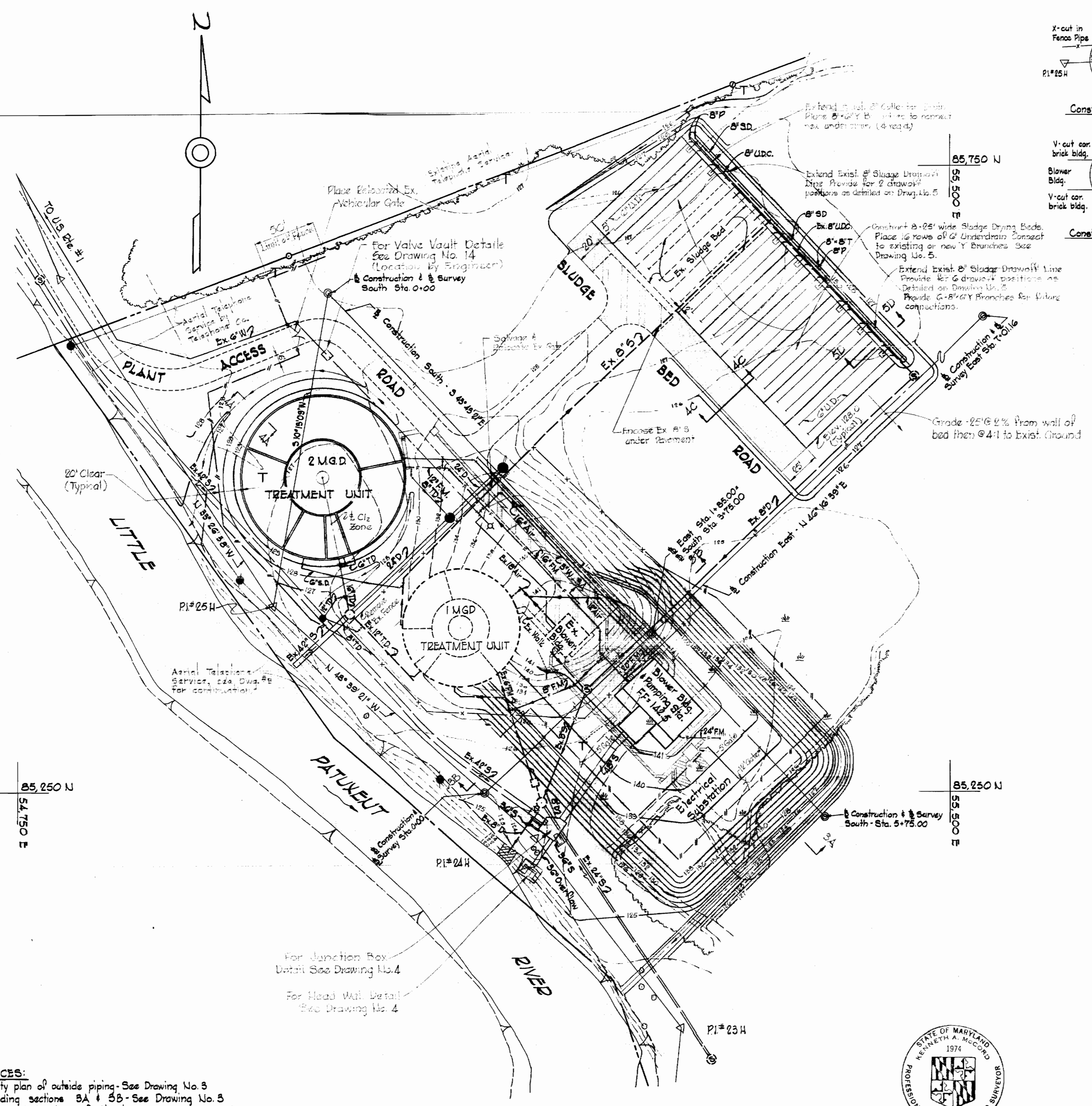
CONTRACT NO. 237-S

LOCATION MAP
AND VICINITY MAP

SAVAGE SEWAGE
TREATMENT PLANT ADDITION NO. 1

DRAWING
NO. 1
OF 33

SCALE
AS
SHOWN



BENCH MARKS

W.R. & A. BM 'Blaine'	Elev. 189.06
X-cut on flange bolt of fire hydr., 40' ± Rt. of E. Sta. 2-25 ± to South	
W.R. & A. BM '1-A'	Elev. 127.65
R.R. Spike in 36' Oak 8' Lt. P.I. 19-4	

TREATMENT PLANT DESIGN DATA

	Exist. Unit #1	1st Addition - Unit #2	Composite
Design Population	10,000	20,000	30,000
Design Flow (Avg. Daily)	1.0 mg.	2.0 mg.	3.0 mg.
Type of Treatment	(Walker Process)	(Dravo Aeropack)	Contact Stabilization
B.O.D. Loading	1700#/day	3400#/day	5100#/day
Settling Zone - Detention time	4.25 hrs.	2.5 hrs.	5.0 hrs. - Avg.
Surface Rate	680 gpd/sf	785 gpd/sf	750 gpd/sf - Avg.
Aeration & Receration Zones - Vol.	29 cu ft / # BOD/day	30 cu ft / # BOD/day	30 cu ft / # BOD/day
Digester Zone - Vol.	1700 cu ft / # BOD/day	1700 cu ft / # BOD/day	1700 cu ft / # BOD/day
Chlorine Contact	2.5 cu ft / capita	2.0 cu ft / capita	2.5 cu ft / capita
Sludge Drying Bed - Area	30 min.	30 min.	30 min.
	0.5 sf / capita	1.0 sf / capita	0.8 sf / capita

- GENERAL NOTES**
- Approximate location of existing mains are shown. The Contractor shall take all necessary precautions to protect existing mains and services and maintain uninterrupted supply. Any damage incurred shall be repaired immediately.
 - All pipe elevations shown are invert (I) elevations.
 - The Contractor shall locate existing utilities a minimum of two weeks in advance of construction operations in vicinity of utilities.
 - The location of all valves, fittings, etc. have been located in plan and dimensions shall be strictly adhered to unless otherwise directed by the Engineer.
 - For all standard details see standards bound in the Specifications.
 - Block all fittings with concrete. See Standard Details in the Specifications.
 - Pipelines shall be of the material listed in the Specifications. All airlines shall have a minimum of 2' cover & all sewer and water shall have a minimum of 3/4' cover unless otherwise noted by profiles or elevations on the plans.
 - Clear all utilities by a minimum of 6' vertically. All parallel pipe systems to have 2'-0" minimum horizontal clearance.
 - All manholes shall be 4'-0" inside diameter except W.I. 3733 (Junction Box).
 - The Contractor shall provide a joint in all sewer mains within 2'-0" of exterior manhole walls.
 - Brick manholes shall have 12" or 16" walls as called for on the plans or in the Specifications.
 - All 8" Cast Iron Sewer Pipe to be Class 22 unless otherwise noted.
 - Elevations & coordinates are based on the Maryland State Datum & Grid Systems.
 - All outside valves shall be plug valves except for the 3" & 6" water main valves which shall be a gate valves.
 - All existing valve boxes, manhole frames & covers and existing appurtenances shall be adjusted to finished grade.
 - Tank drain valves & force main blowoff valve, noted on Drawing No. 3, shall be sealed in accordance with MSHD requirements.

LEGEND

Item	Existing	New
Grading Contours	--- (solid)	--- (dashed)
Buildings & Structures	[Solid Box]	[Dashed Box]
Roadway Pavements	[Solid Line]	[Dashed Line]
Resurfaced Roadway Pavements	[Solid Line]	[Dashed Line]
Fence	[Solid Line]	[Dashed Line]
Pole	T	⊙
Concrete Sidewalk	=====	⊙ Sidewalk
Raw Sewage (Gravity); Overflow & Effluent Sewer (Conc.)	Ex. 24" S2	24" S2
Raw Sewage - Force Main (CIP)	Ex. 6" FM	16" FM2
Air Lines (Steel)	Ex. 18" Air	16" Air2
Sludge Drawoff Line (CIP)	Ex. 8" S2	8" SD
Underdrain (VCP-P)	Ex. 6" UDC	6" UDC
Underdrain Collector (VCPX)	Ex. 8" UDC	8" UDC

(* New - Work to be done under this Contract.)

- REFERENCES:**
- For utility plan of outside piping - See Drawing No. 3
 - For grading sections BA & SB - See Drawing No. 3
 - For geometric locations of Structures - See Drawing No. 3
 - For Structural Details of Treatment Unit No. 2 - See Drawings 19 thru 21
 - For Structural Details of Blower Bldg. & Pumping Station - See Drawings 8 thru 12
 - For Details of Electrical Sub-Station Foundations - See Drawing No. 10
 - For Pipe Line Profiles - See Drawing No. 4

GRADING PLAN
Scale: 1" = 50'



Kenneth A. Wood

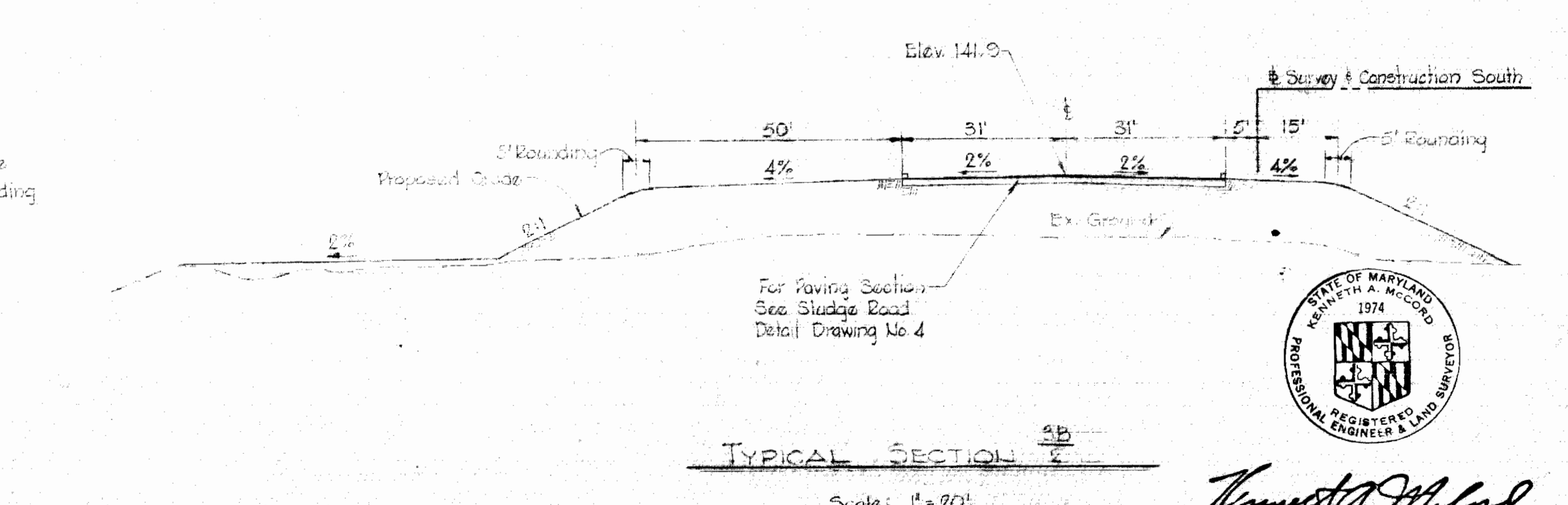
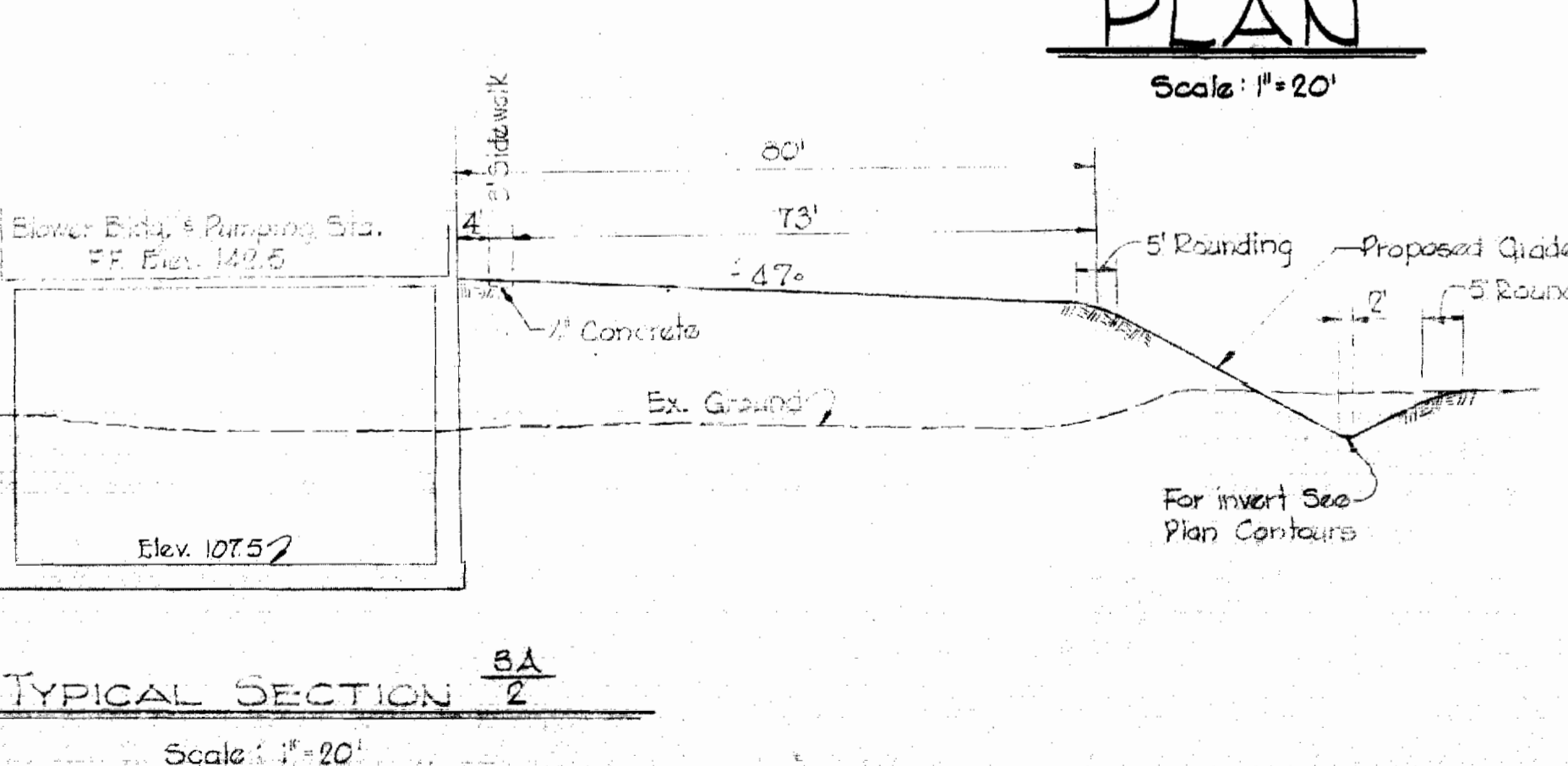
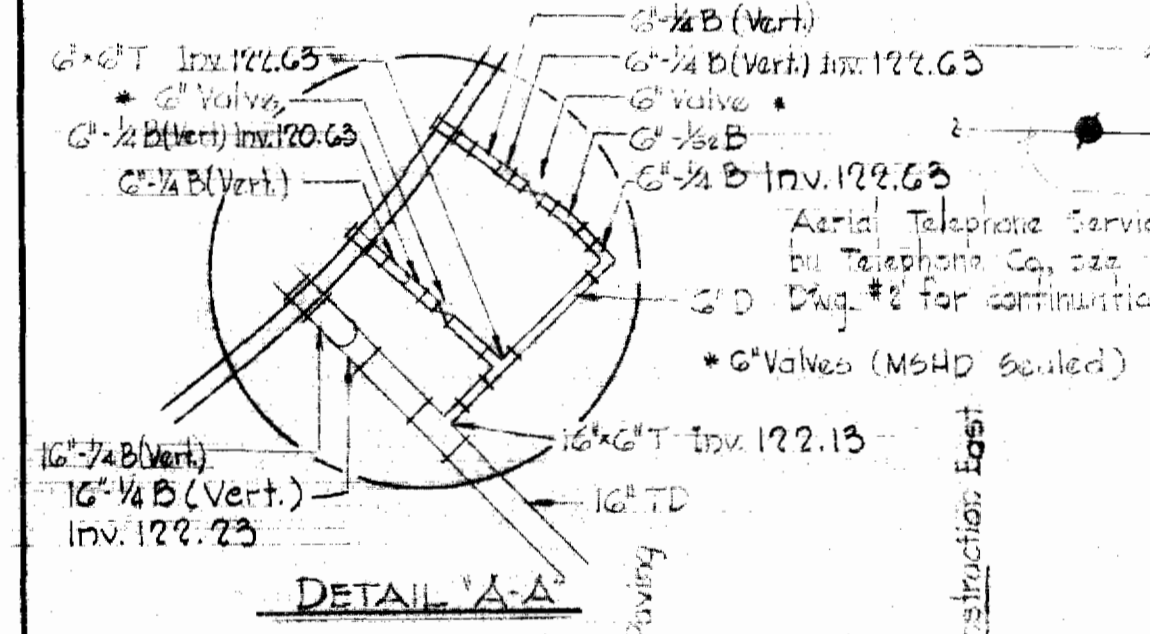
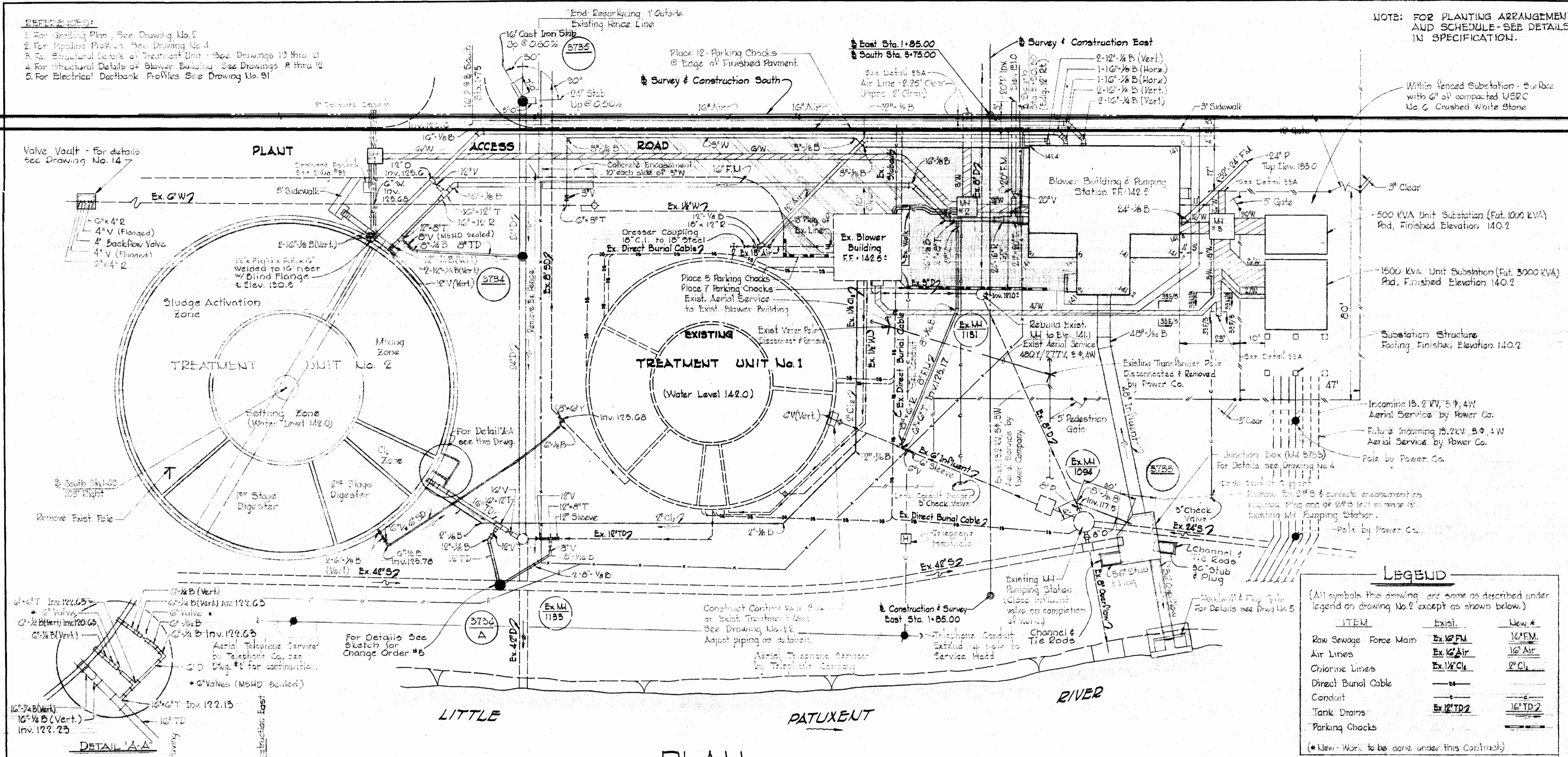
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS DATE: 4-11-69 W.O.P. Ibert CHIEF ENGINEER	CONTRACT NO. 237-S	GRADING PLAN AND REFERENCES	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1	DRAWING NO. 2 OF 33	SCALE 1" = 50' 43 JUN 19-1
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237-S/2

REFERENCES:

1. For Grading Plan, See Drawing No. 2
2. For Impound Ponds, See Drawing No. 4
3. For Structural Details of Treatment Unit - See Drawings 13 thru 21
4. For Structural Details of Blower Building - See Drawings 8 thru 12
5. For Electrical Deckbank Profiles See Drawing No. 91

NOTE: FOR PLANTING ARRANGEMENT AND SCHEDULE-SEE DETAILS IN SPECIFICATION.



LEGEND

(All symbols in this drawing are same as described under legend on drawing No. 2 except as shown below.)

ITEM	Exis.	New #
Raw Sewage Force Main	Ex. 12" FM	16" FM
Air Lines	Ex. 12" Air	16" Air
Chlorine Lines	Ex. 12" Cl	8" Cl
Direct Burial Cable	-	-
Conduit	Ex. 12" TD2	16" TD2
Tank Drains	-	-
Parking Checks	-	-

(*New Work to be done under this Contract)

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ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
4-11-69
DATE

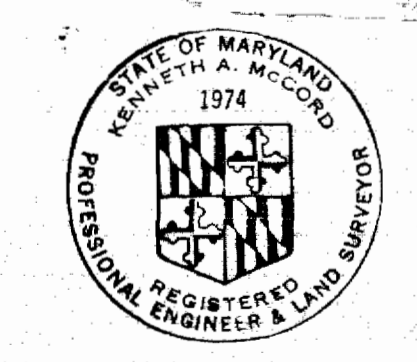
CONTRACT NO. 237-S

UTILITY PLAN AND SECTIONS

SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1

DRAWING NO. 3 OF 33
SCALE AS SHOWN

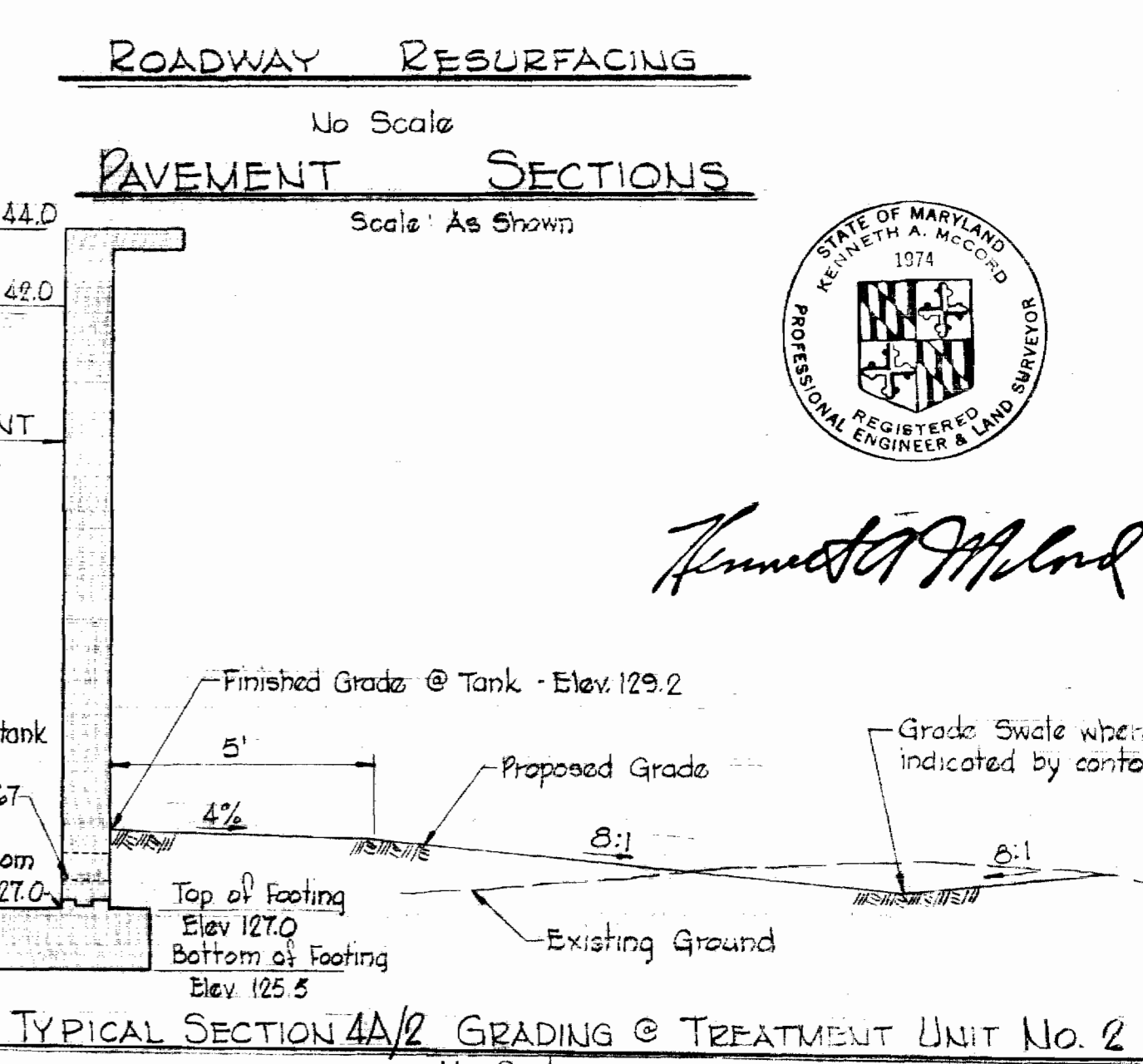
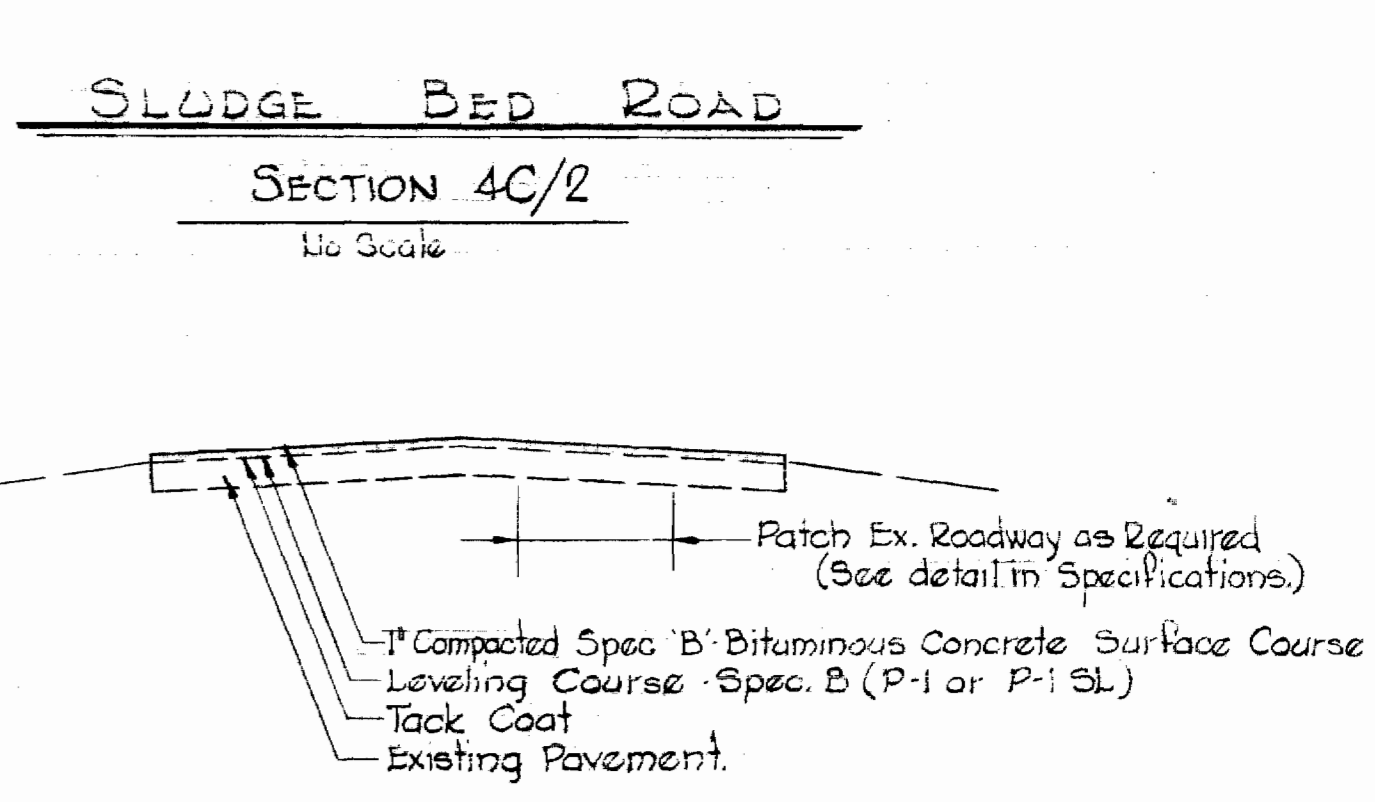
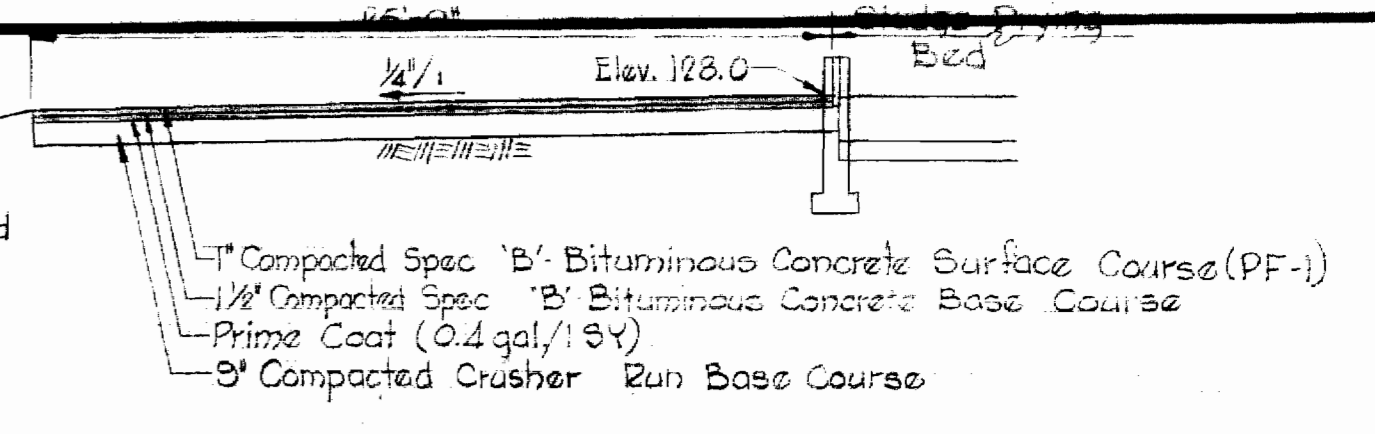
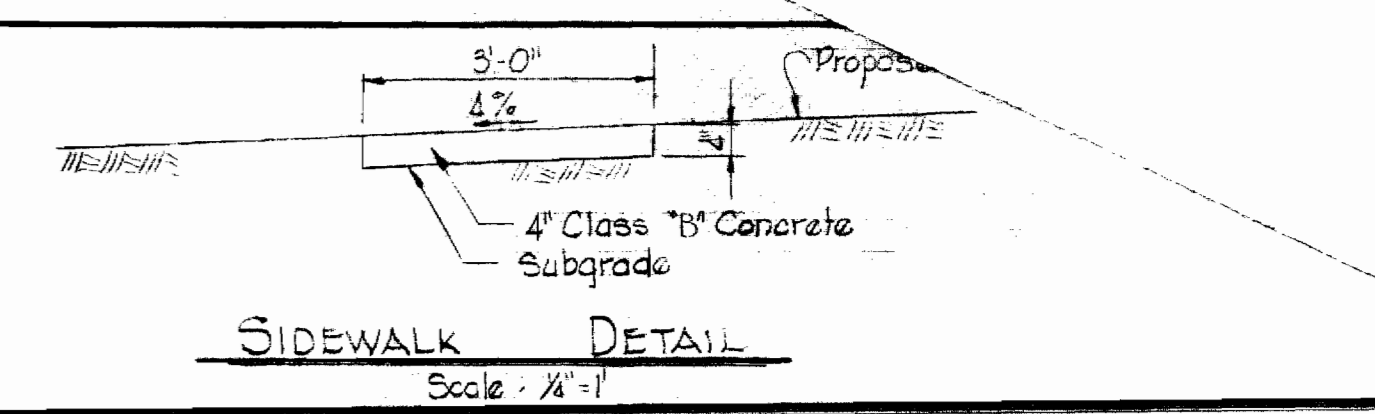
AS BUILT 3/2/72



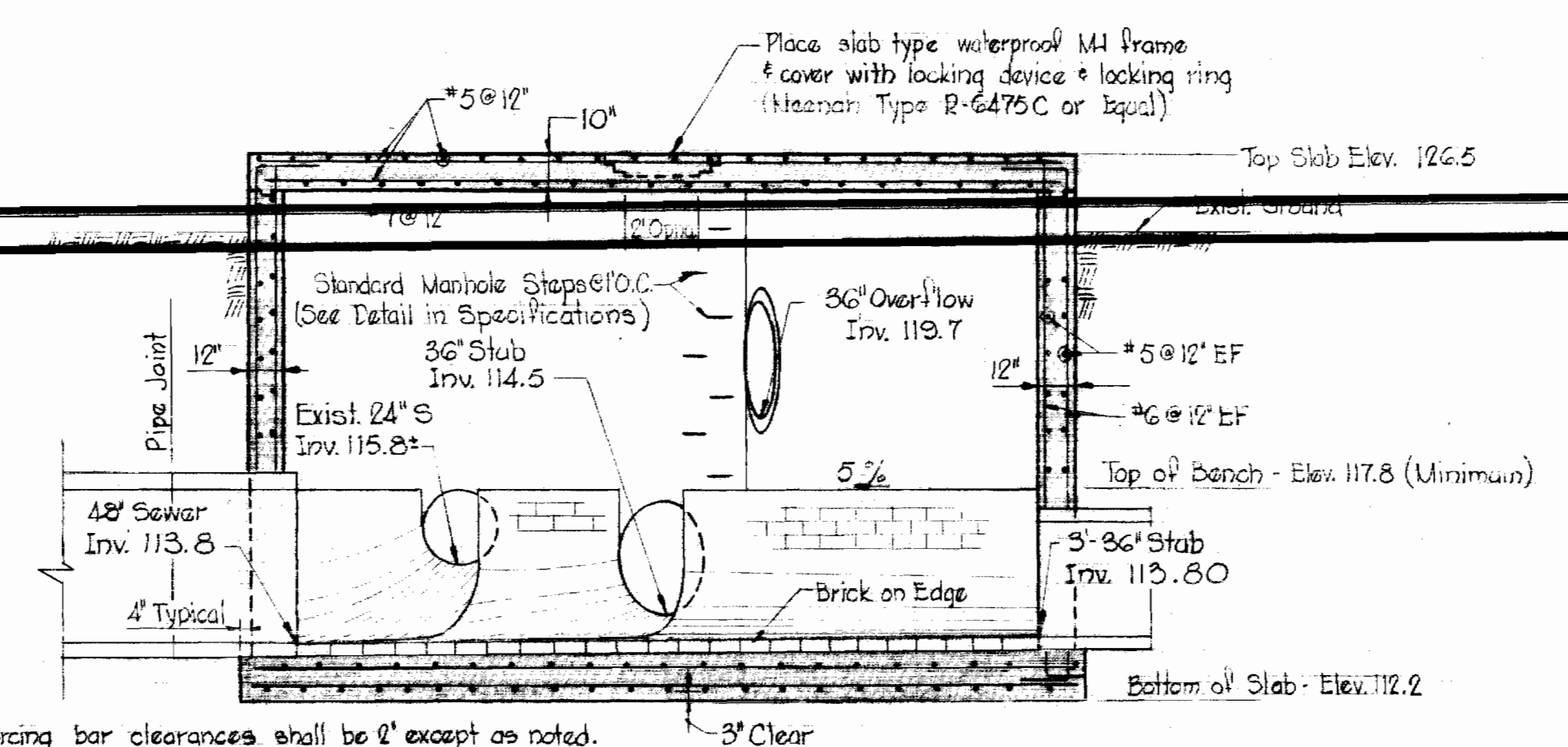
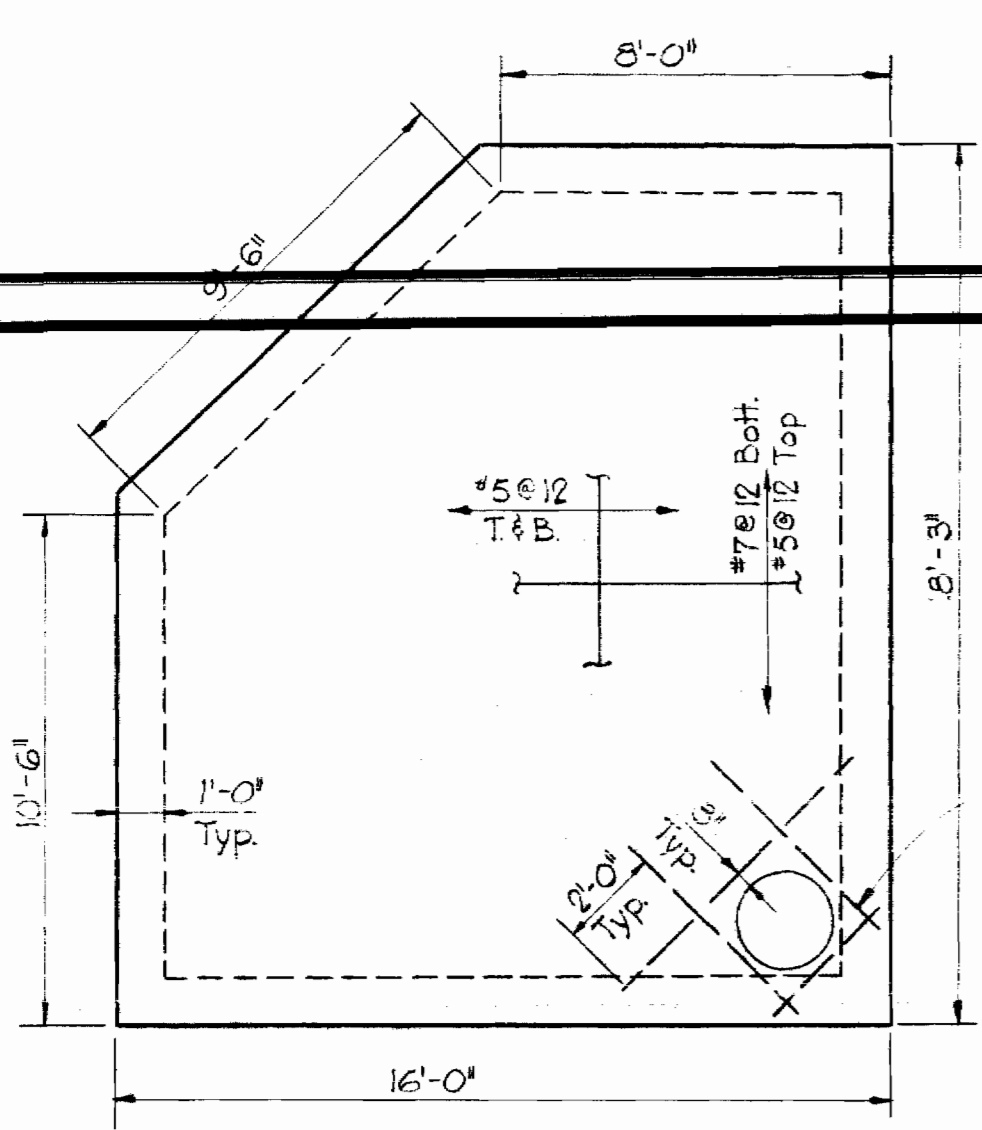
Howard M. Lord

WS 237-S/3

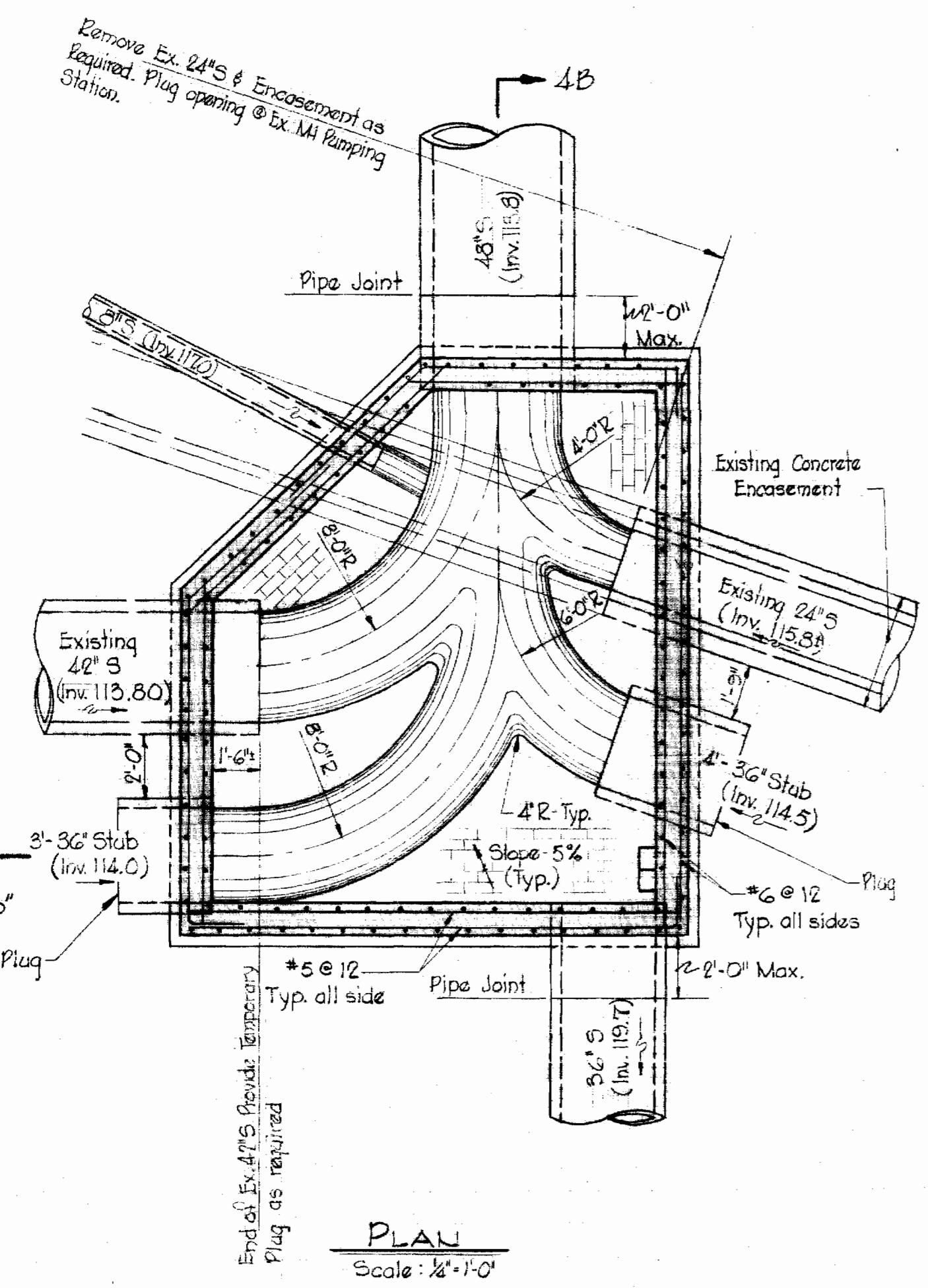
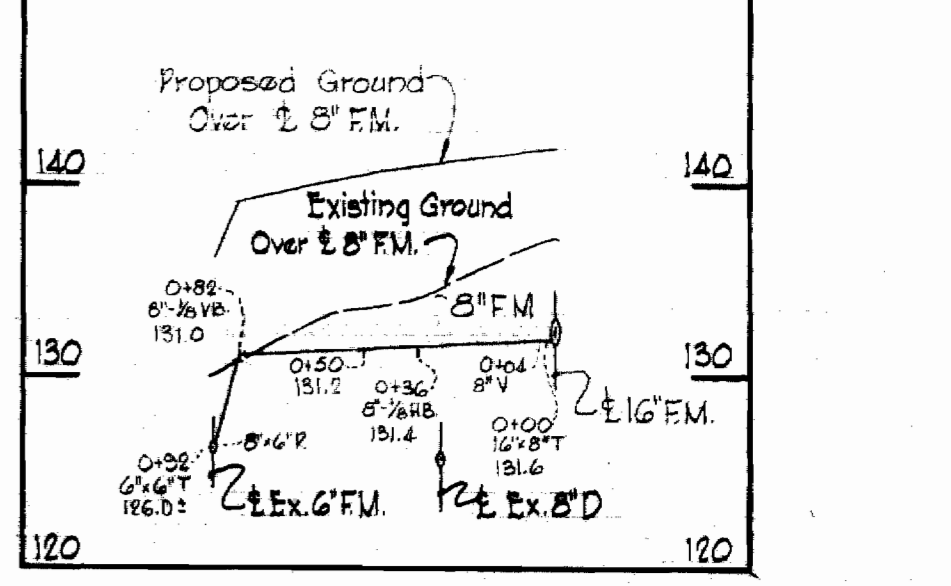
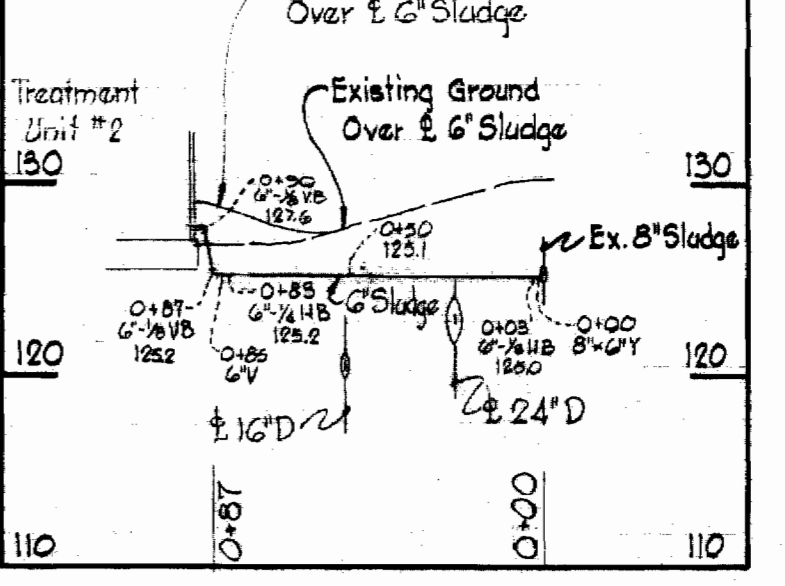
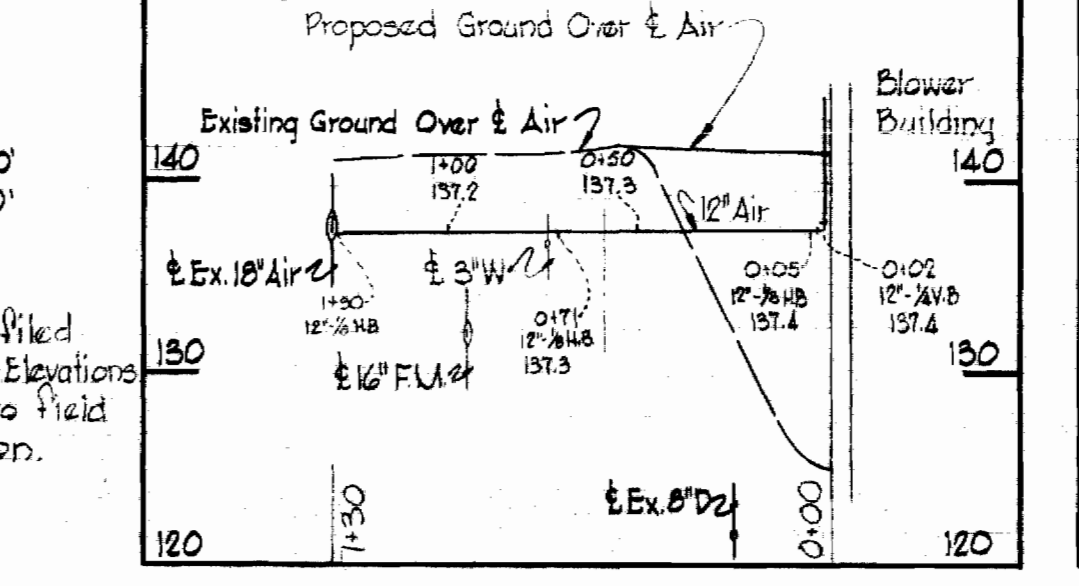
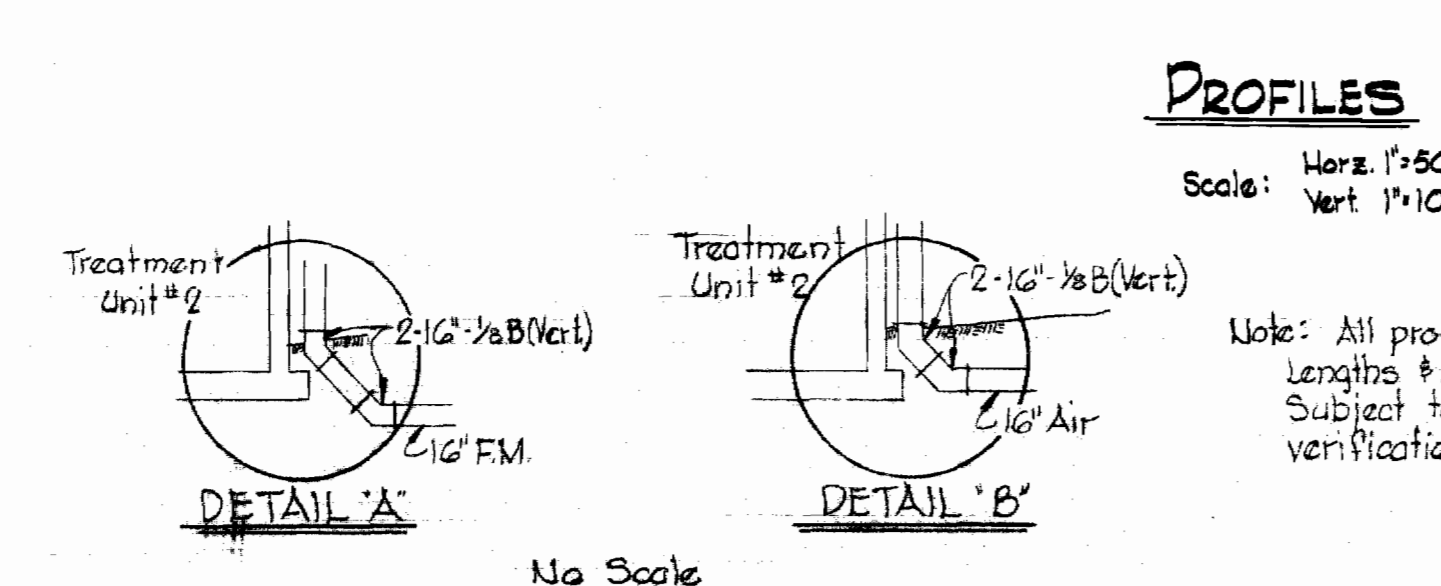
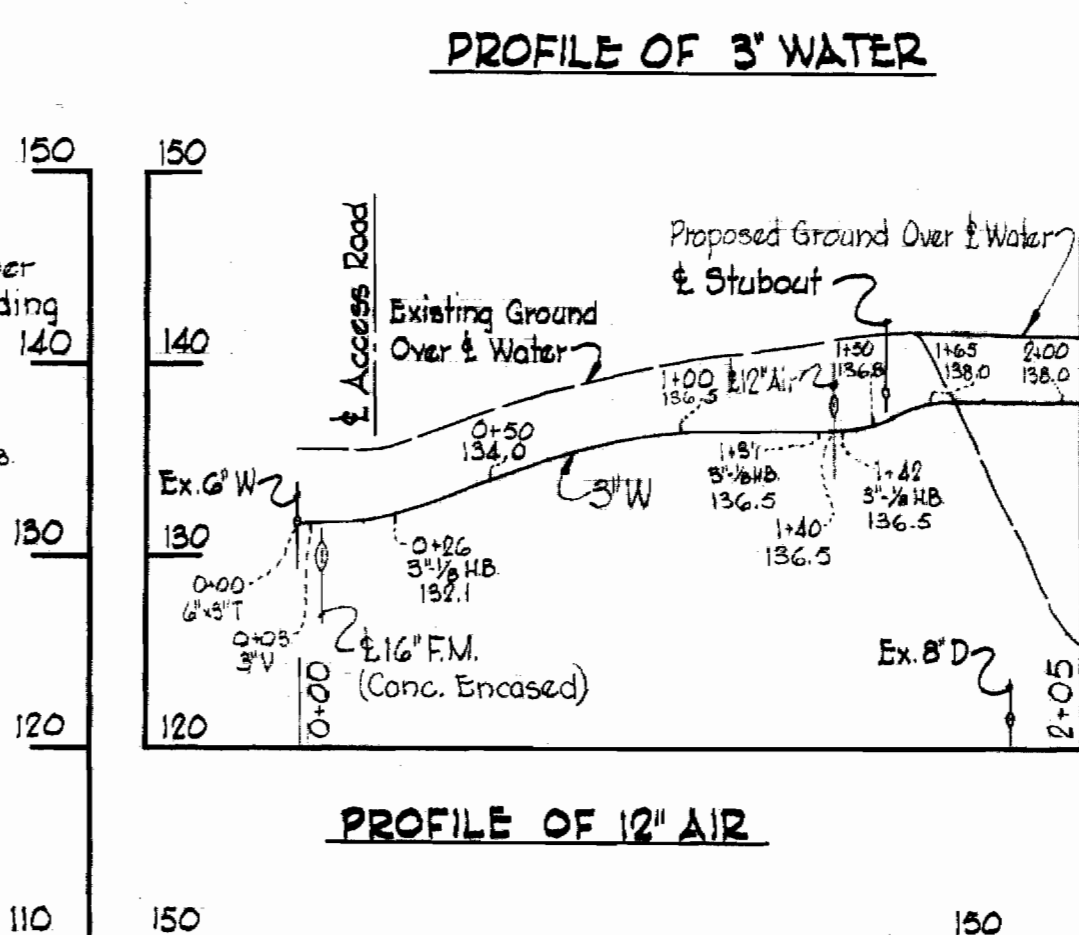
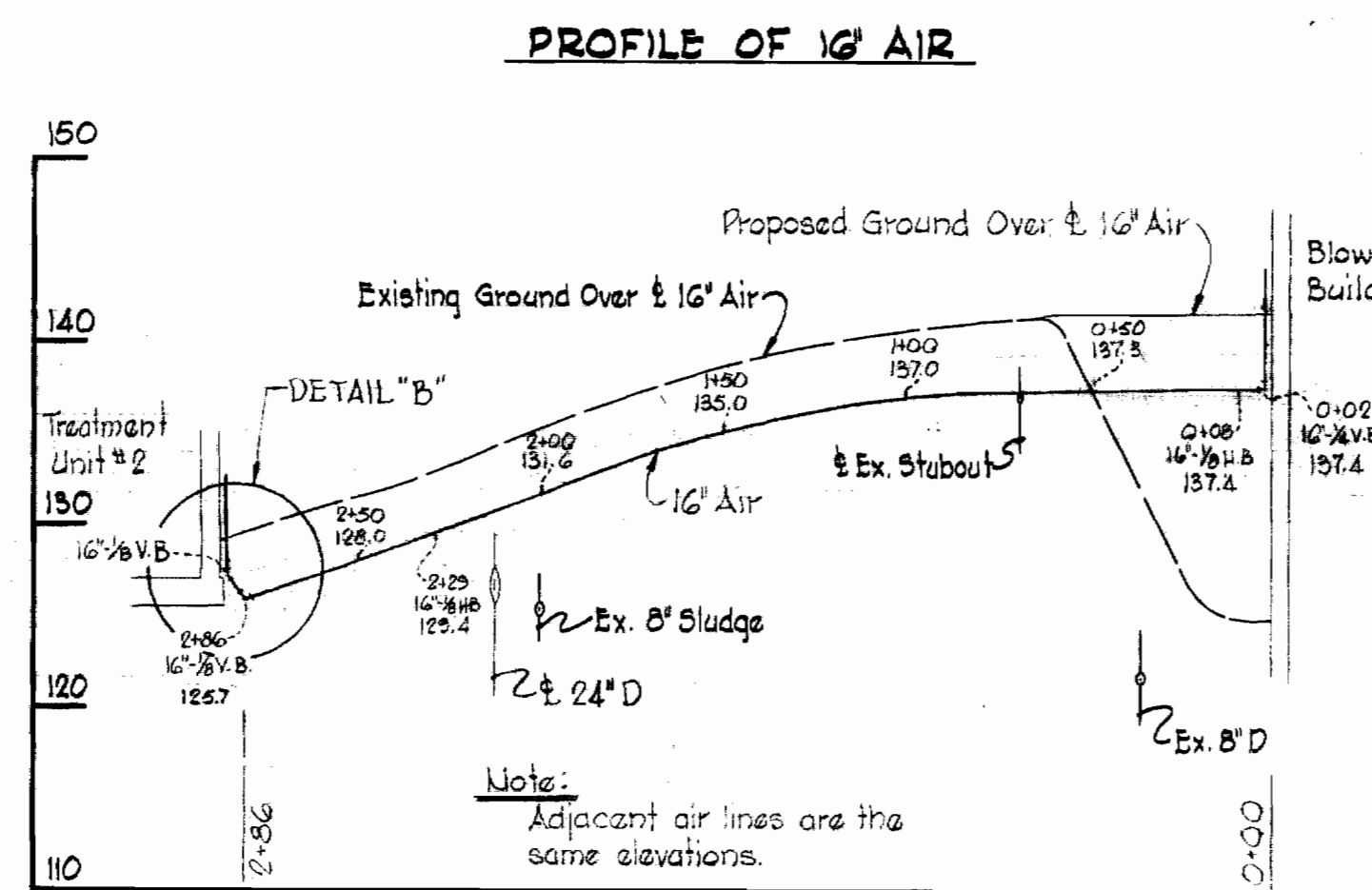
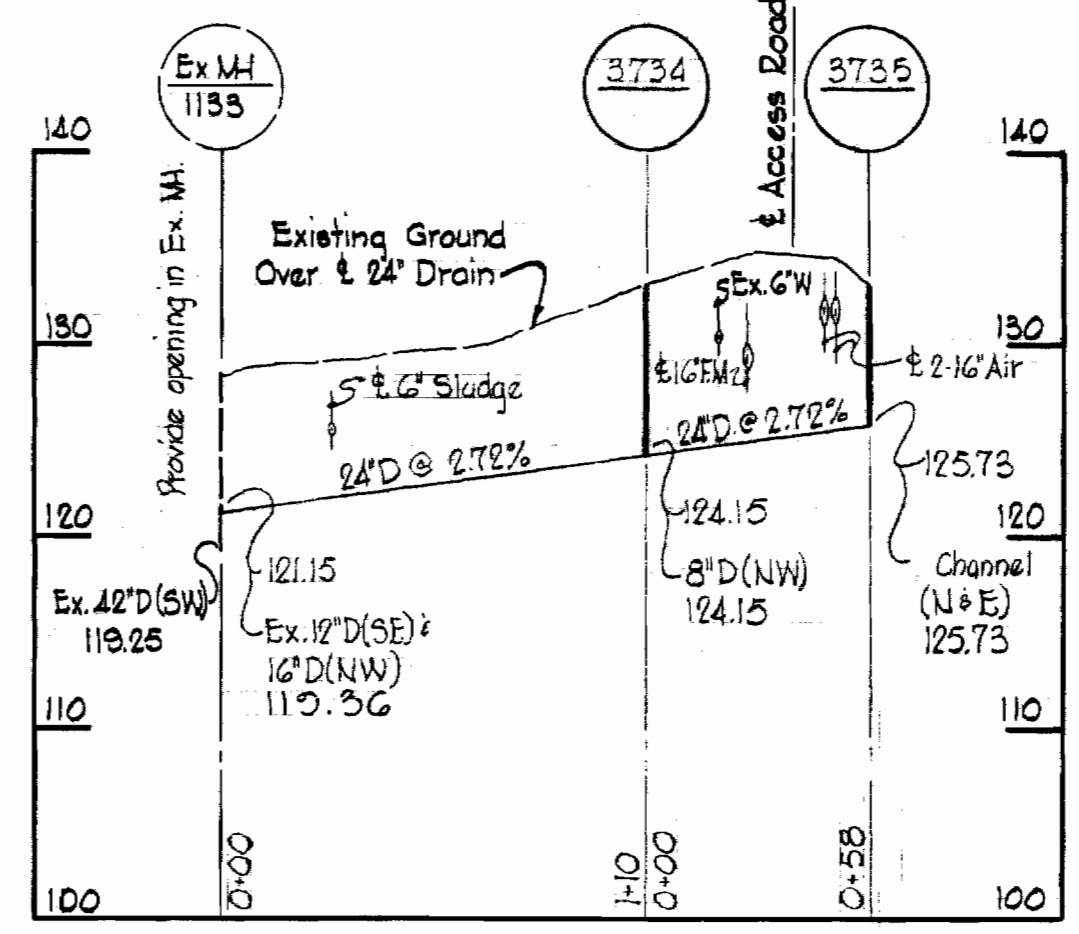
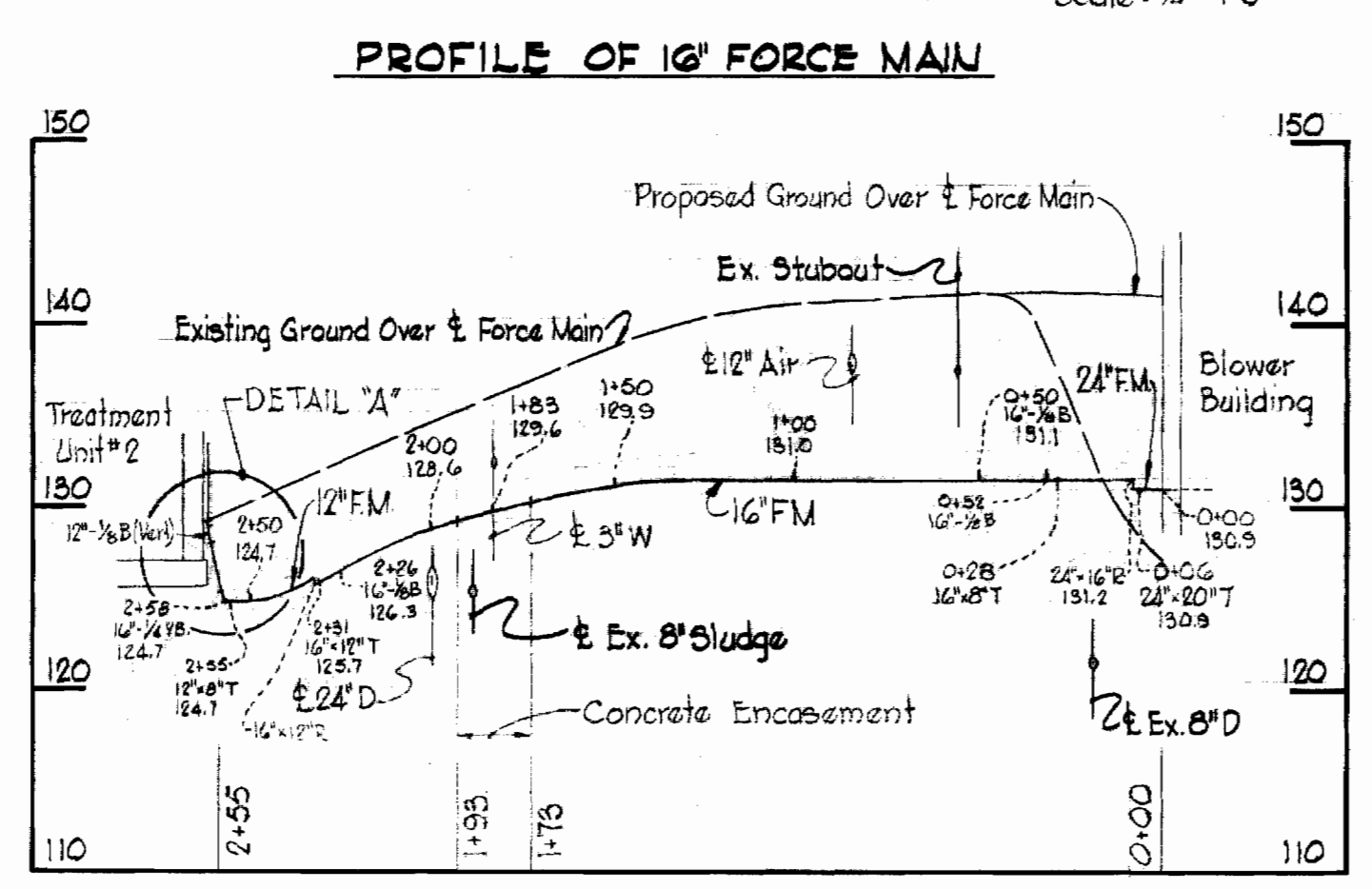
W. O. GOSO



Kenneth A. McCord



Note: All reinforcing bar clearances shall be 2" except as noted. Side walls to be keyed to top & bottom slabs. One inch chamfer on all exposed edges.



DETAIL - JUNCTION BOX - M# 3733
Scale: As Shown

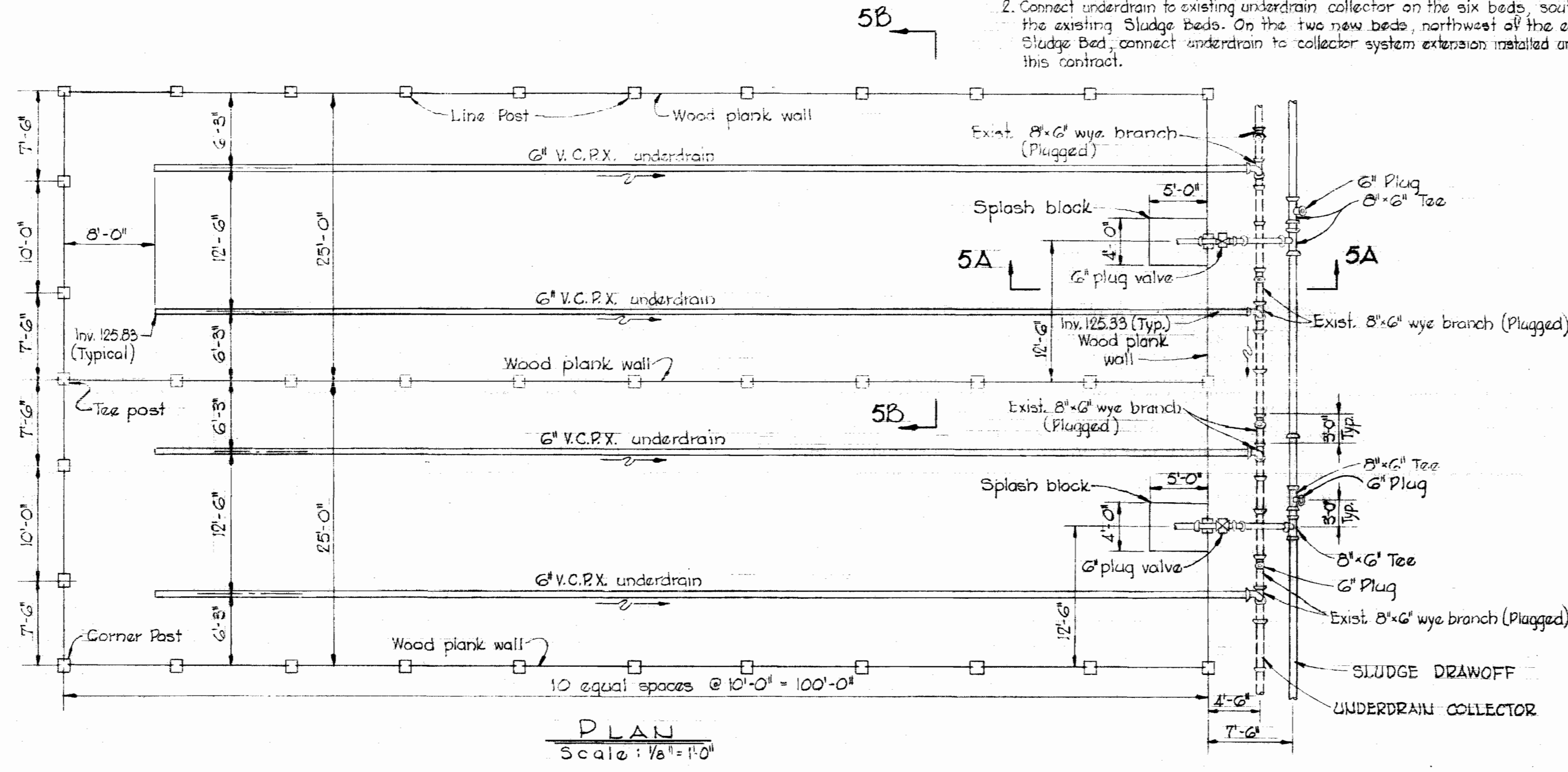
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS 4-11-69 DATE	W. O. GOSO CHIEF ENGINEER	CONTRACT NO. 237-S	DETAILS AND PROFILES	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1	DRAWING NO. 4 OF 33	SCALE AS SHOWN
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SUSPENSE

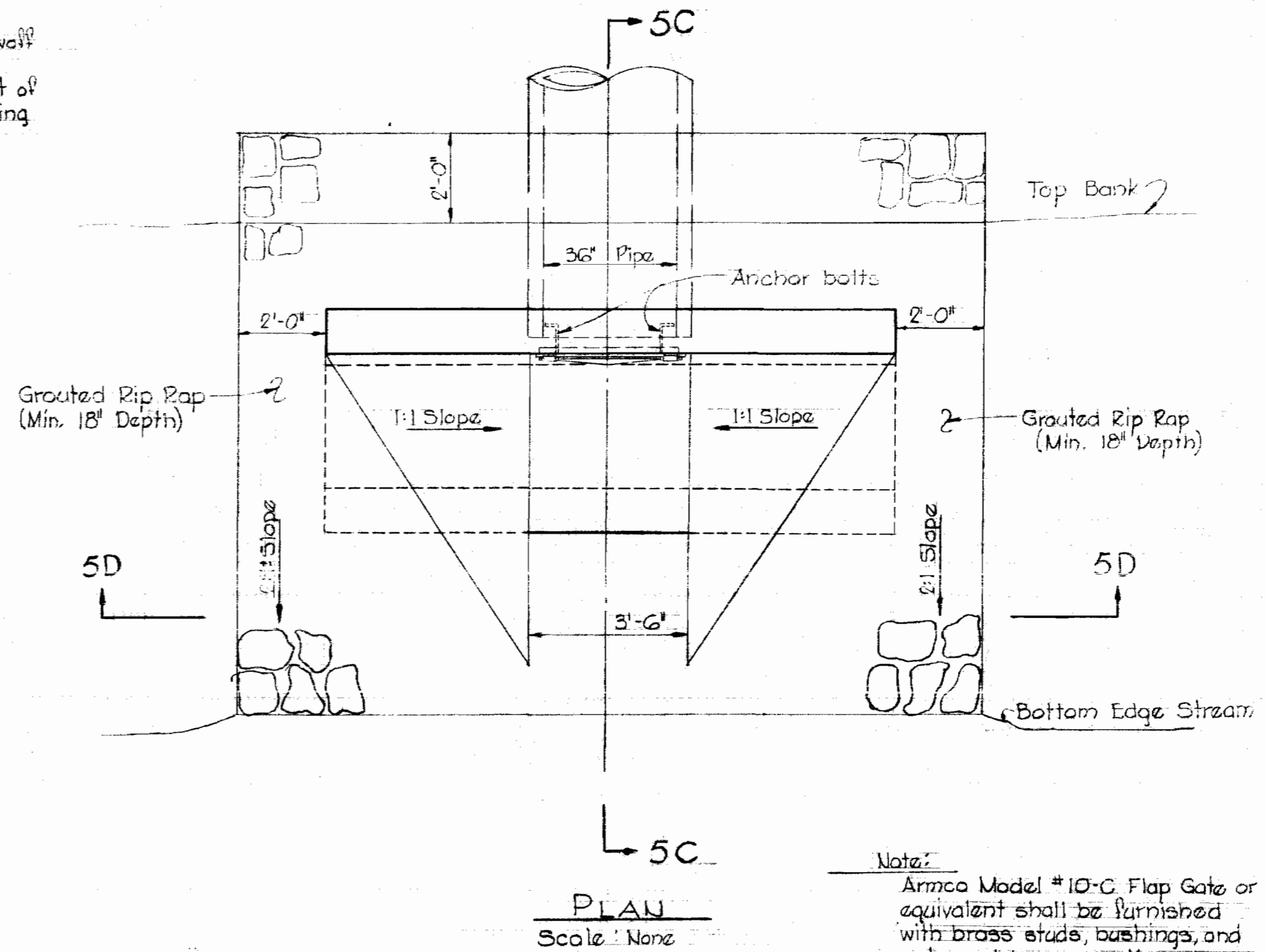
SUSPENSE

NOTES FOR SLUDGE BEDS & ASSOCIATED PIPING

1. Construct 8-25' Sludge Drying Beds complete with underdrain & Sludge drawoff system to include all items shown on this detail at each set of beds.
2. Connect underdrain to existing underdrain collector on the six beds, southeast of the existing Sludge beds. On the two new beds, northwest of the existing Sludge Bed, connect underdrain to collector system extension installed under this contract.

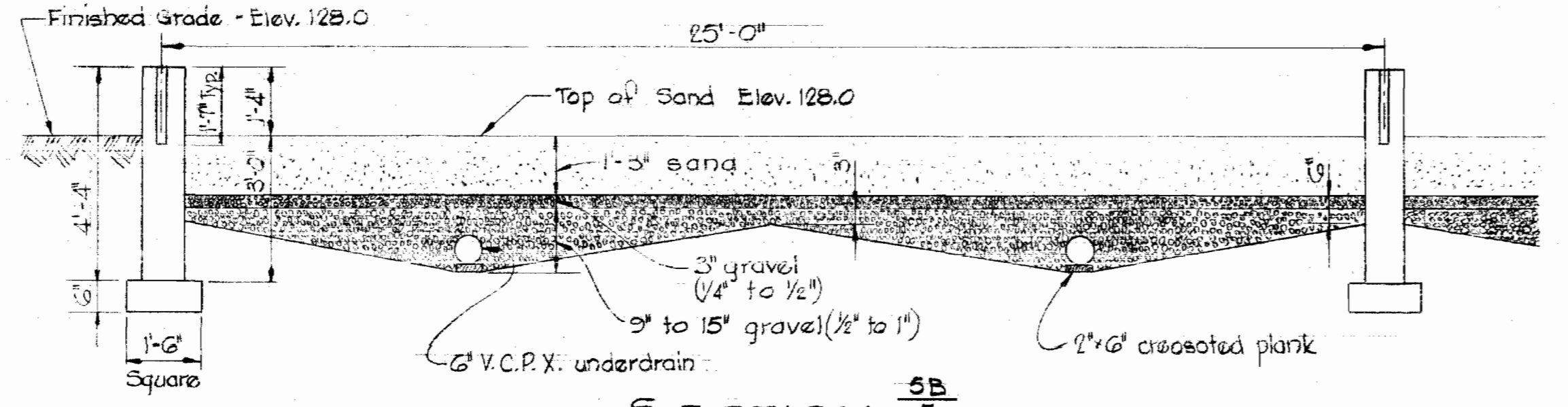


PLAN
Scale: 1/8" = 1'-0"

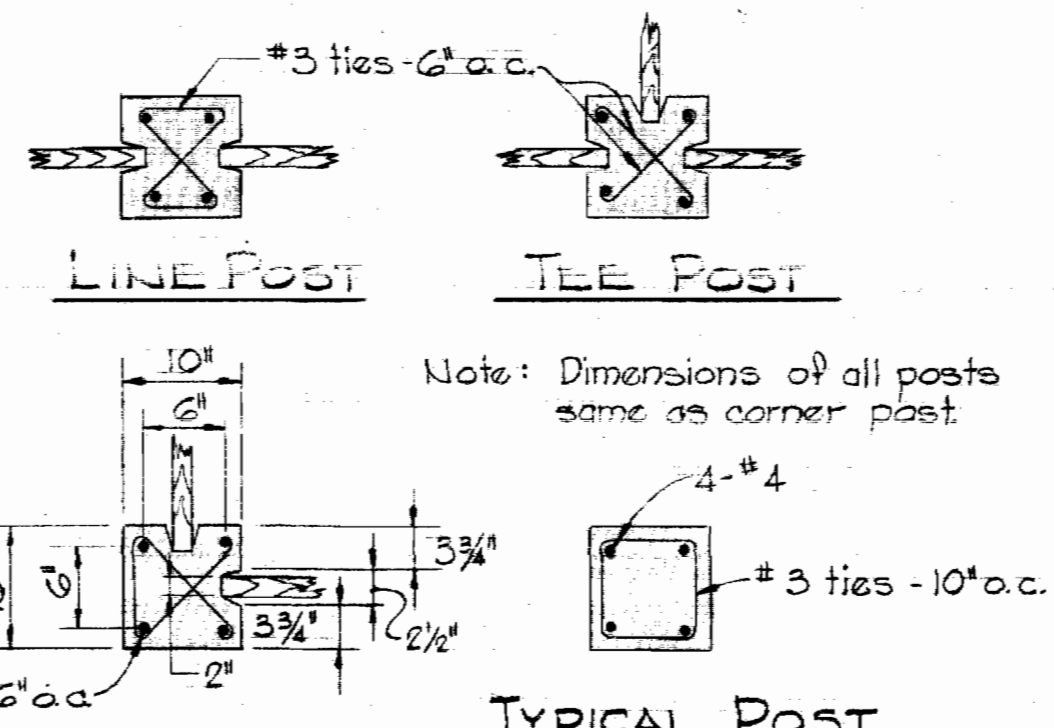


PLAN
Scale: None

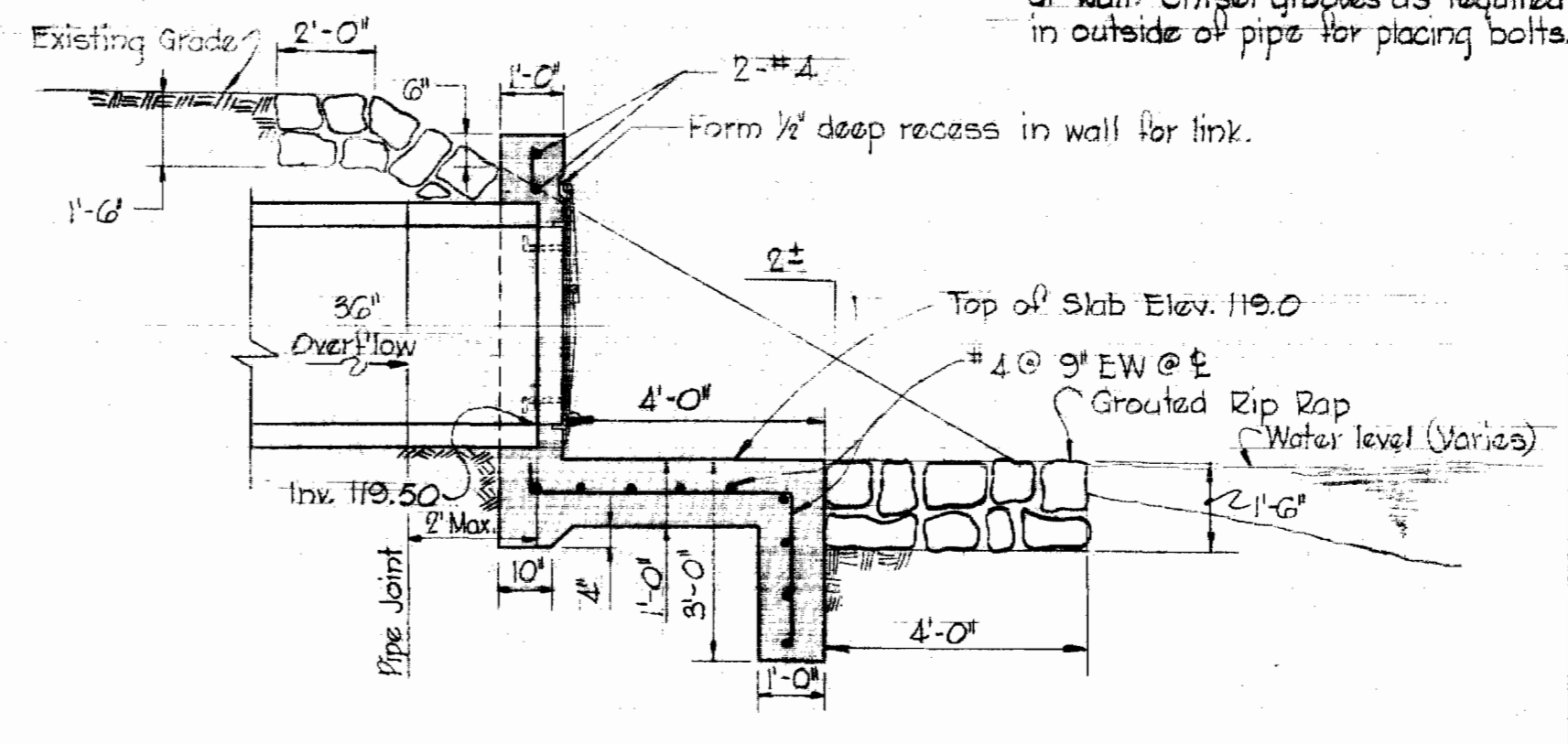
Note:
Armco Model #10-C Flap Gate or equivalent shall be furnished with brass studs, bushings, and nuts and bronze cotter pins. Anchor bolts to be placed with threads protruding from face of wall. Chisel grades as required in outside of pipe for placing bolts.



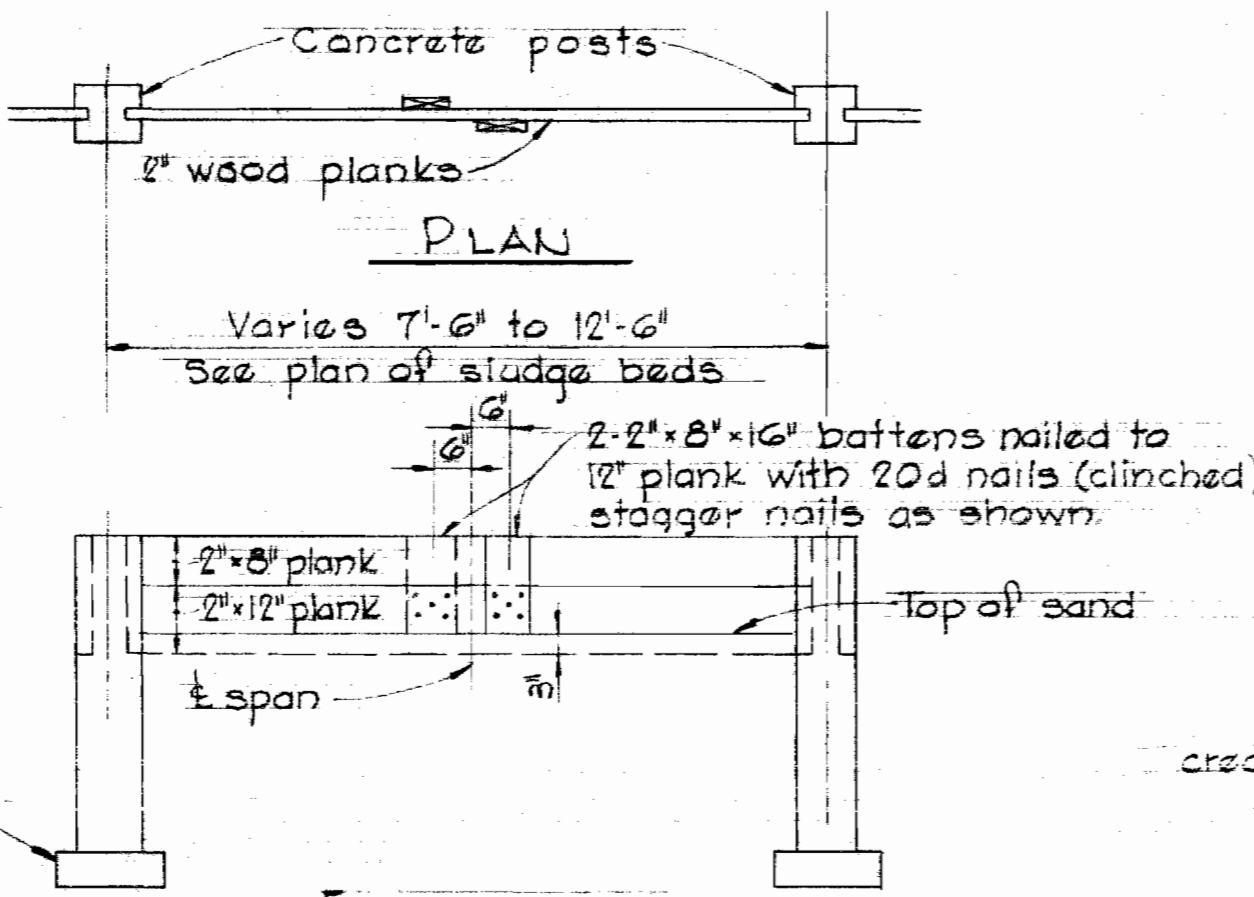
SECTION 5B
Scale: 3/8" = 1'-0"



DETAILS OF POSTS
Scale: 3/4" = 1'-0"

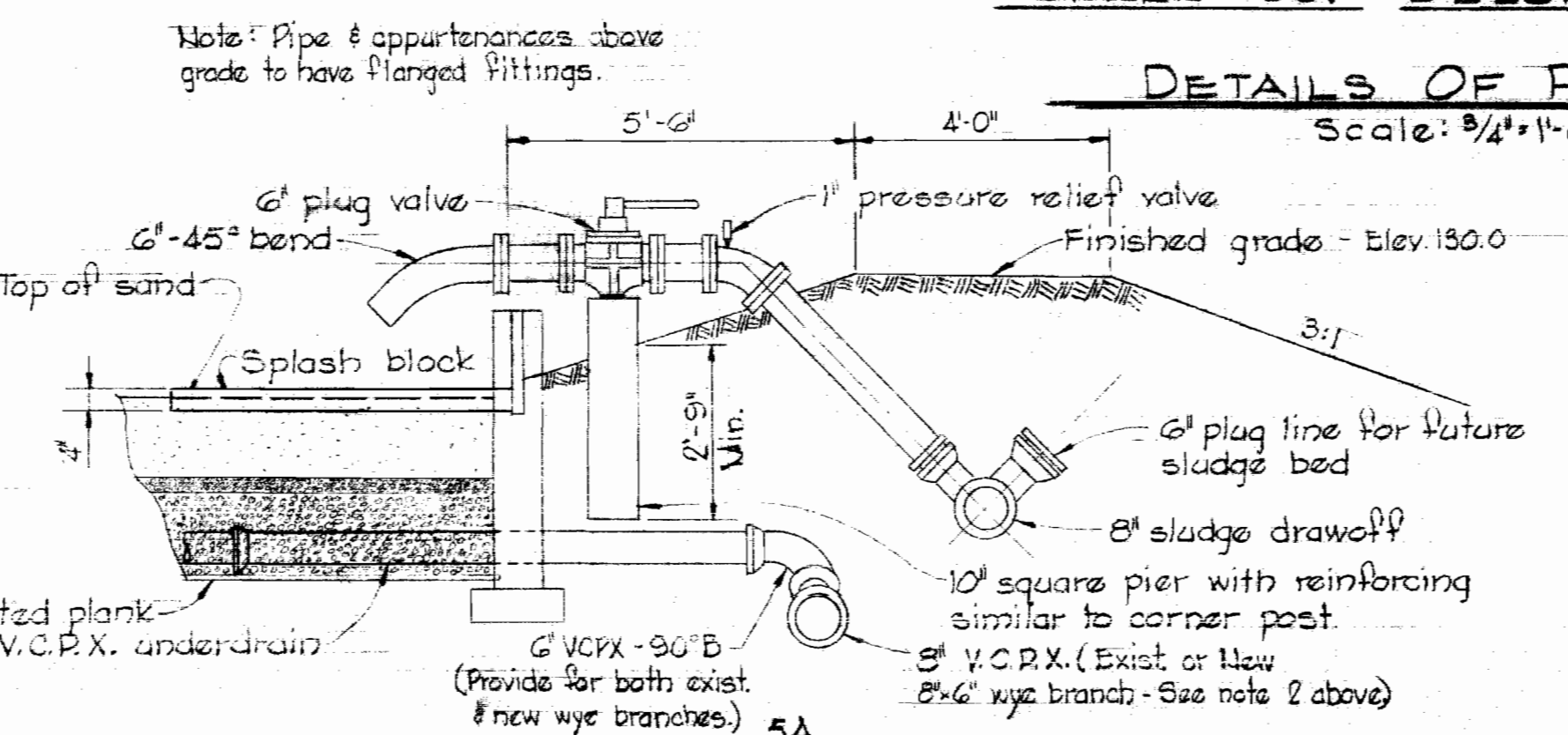


SECTION 5C
Scale: None

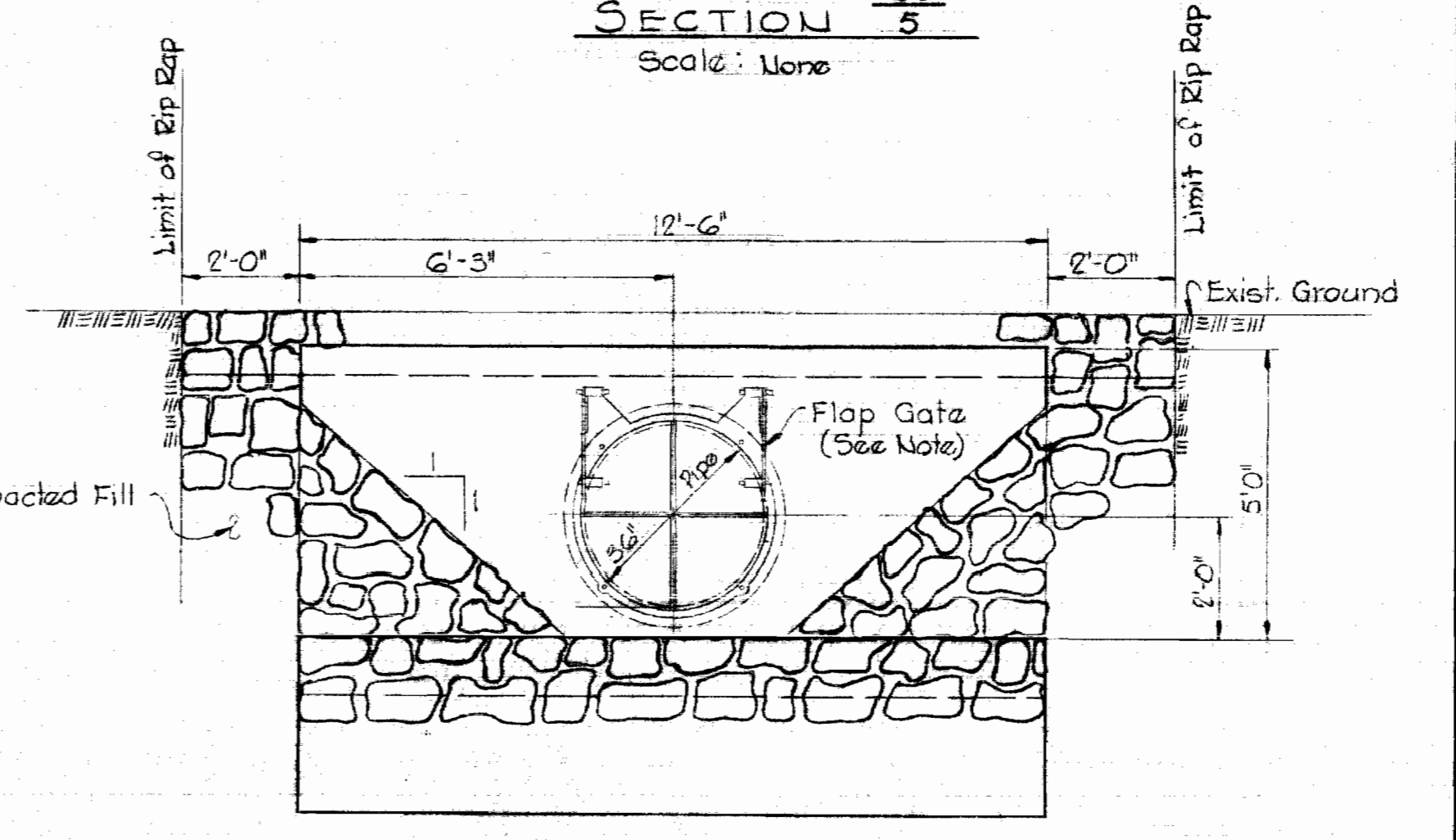


ELEVATION

NOTE: All timber shall be pressure creosoted.
DETAIL OF WOOD PLANK WALL
Scale: 3/8" = 1'-0"

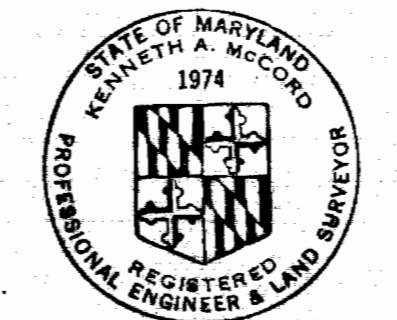


SECTION 5A
Scale: 3/8" = 1'-0"



SECTION 5D
Scale: None

DETAIL OUTFALL STRUCTURE



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SLUDGE DRYING BEDS DETAILS

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BALTIMORE, MARYLAND

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DATE
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CHIEF ENGINEER

CONTRACT NO. 237-S

DETAILS AND STRUCTURES

SAVAGE SEWAGE
TREATMENT PLANT ADDITION NO.1

DRAWING
NO. 5
OF 33

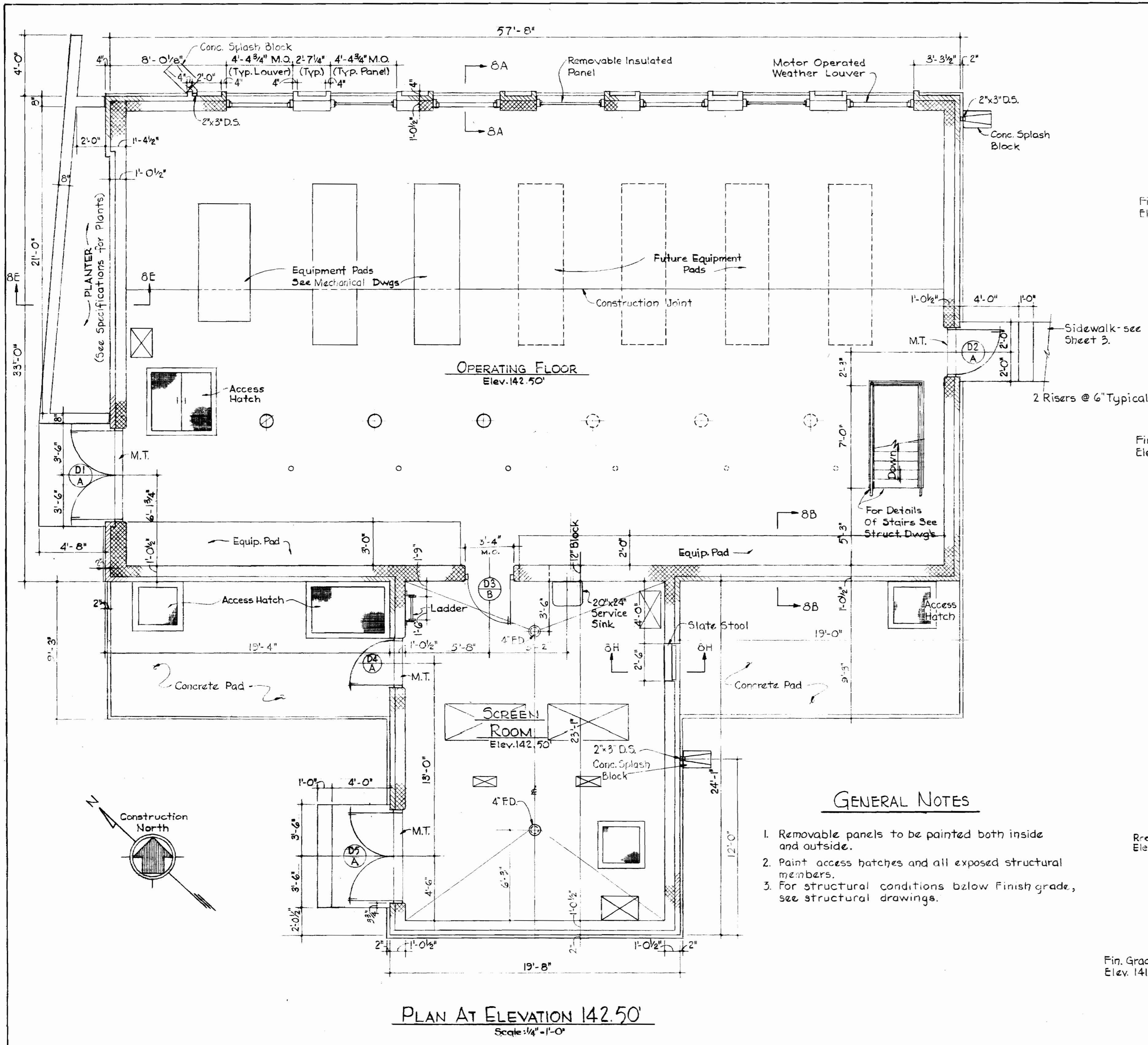
SCALE
AS
SHOWN

237-5/5

SUSPENSE

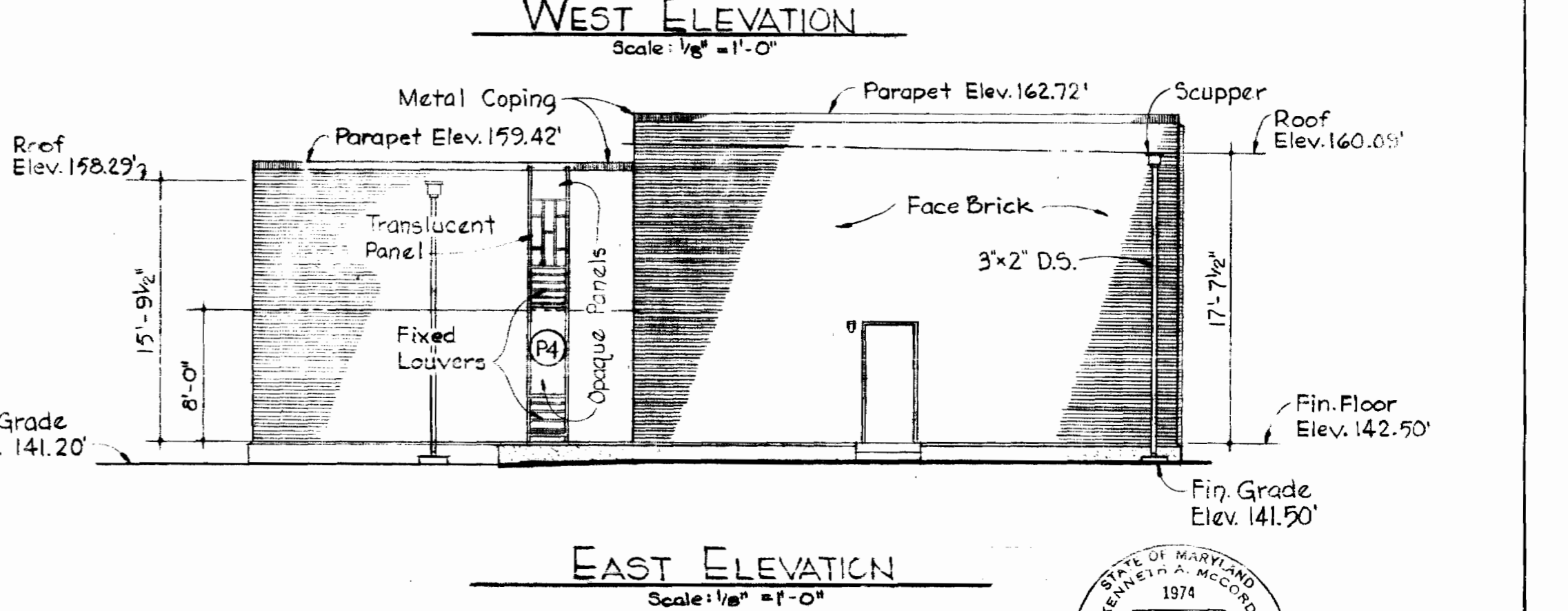
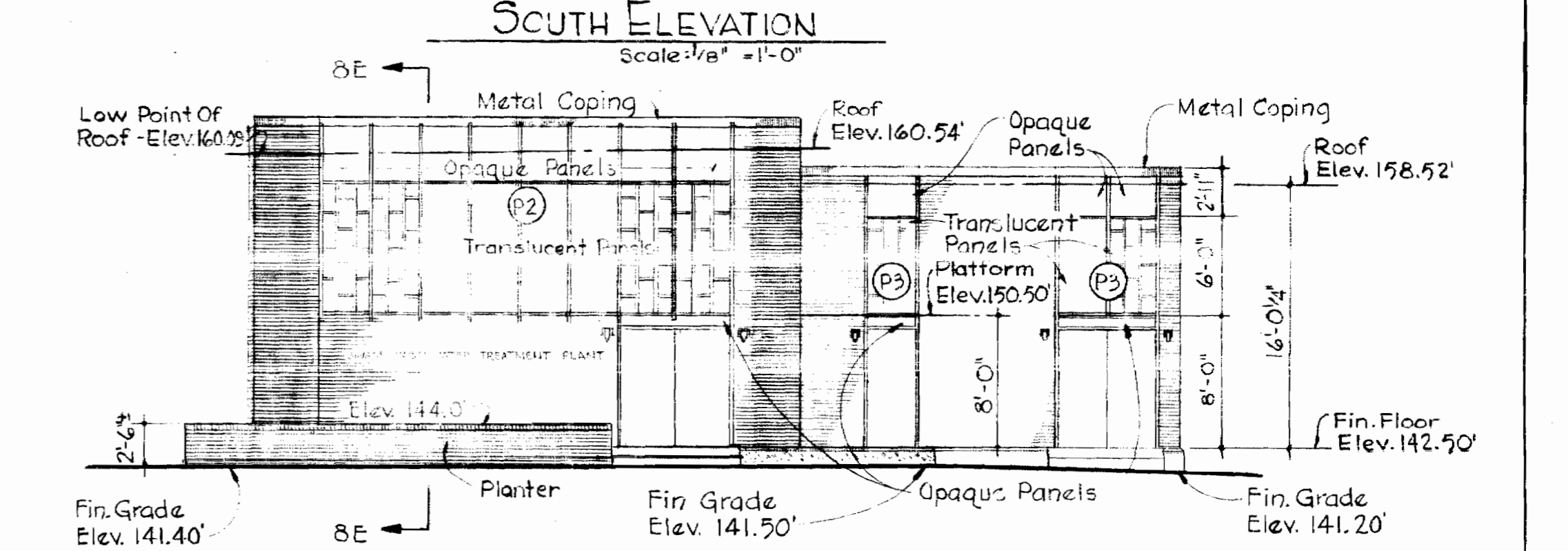
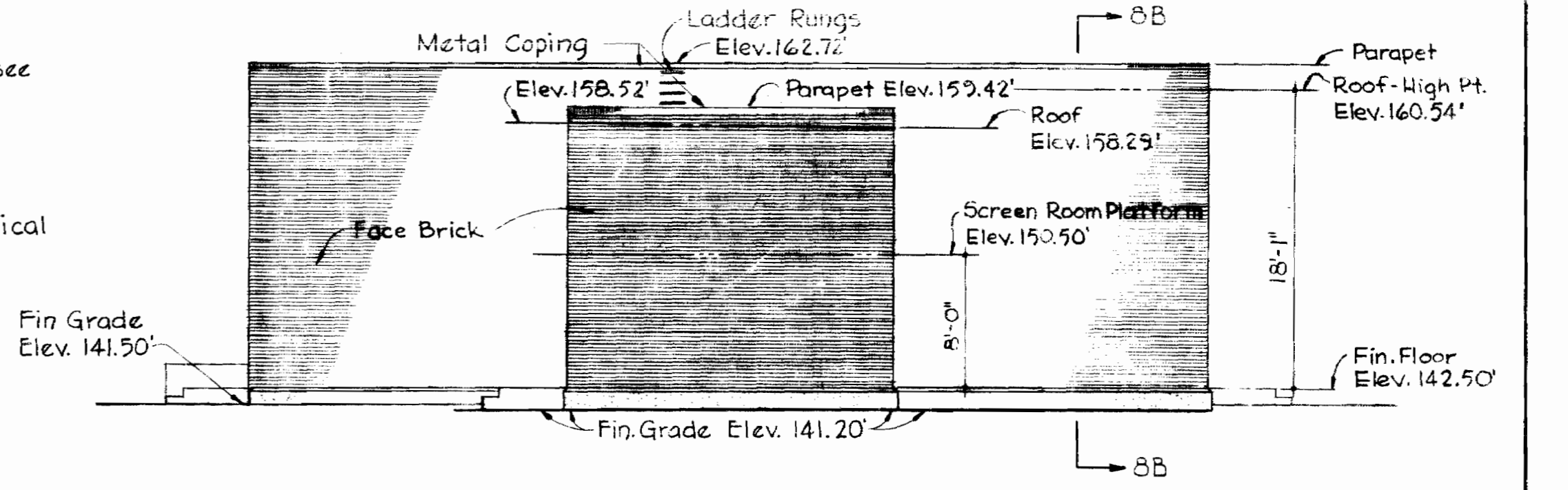
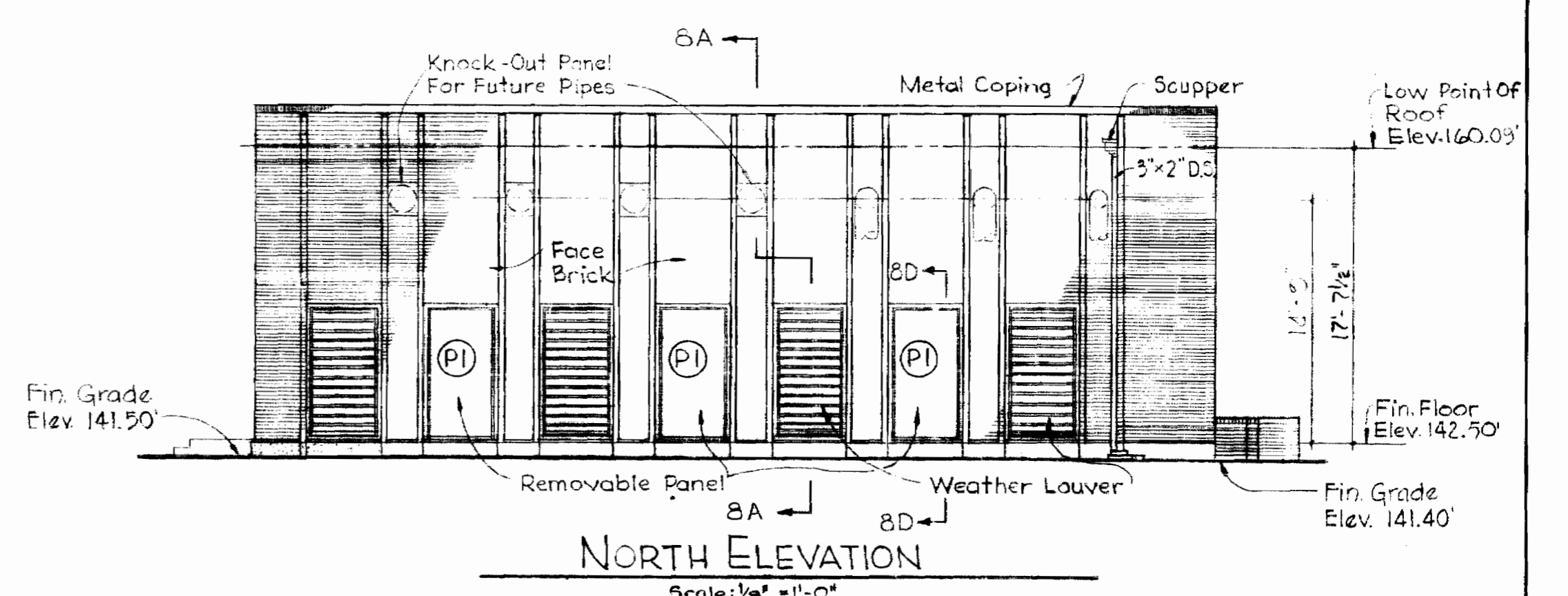
SUSPENSE

SUSPENSE

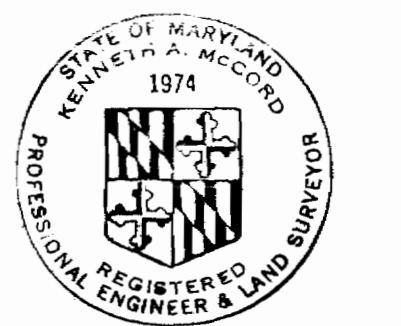


GENERAL NOTES

1. Removable panels to be painted both inside and outside.
2. Paint access hatches and all exposed structural members.
3. For structural conditions below finish grade, see structural drawings.



FINISH SCHEDULE		AREA	FLOOR	BASE	WALL	PAINT	CEILING	PAINT	REMARKS
1.	Operating Floor	Concrete	Paint	Concrete Block	X	Exposed Ceiling	X		PAINT CONC. BASE FULL HIGH PAINT REMAINDER 3/8" HIGH
2.	Screen Room	Concrete	Paint		X			X	
3.	Screen Room Platform	Metal Grating			X			X	
4.	Dry Well	Concrete			X			X	
5.	Wet Well	Conc. Special Finish			Conc. Spec. Fin.				See Painting Specs



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HOWARD COUNTY DEPT. OF PUBLIC WORKS
4-11-69
DATE *W. O. P. [Signature]*
CHIEF ENGINEER

CONTRACT NO. **237-S**

ARCHITECTURAL DETAILS
BLOWER BLDG. & PUMPING STA.

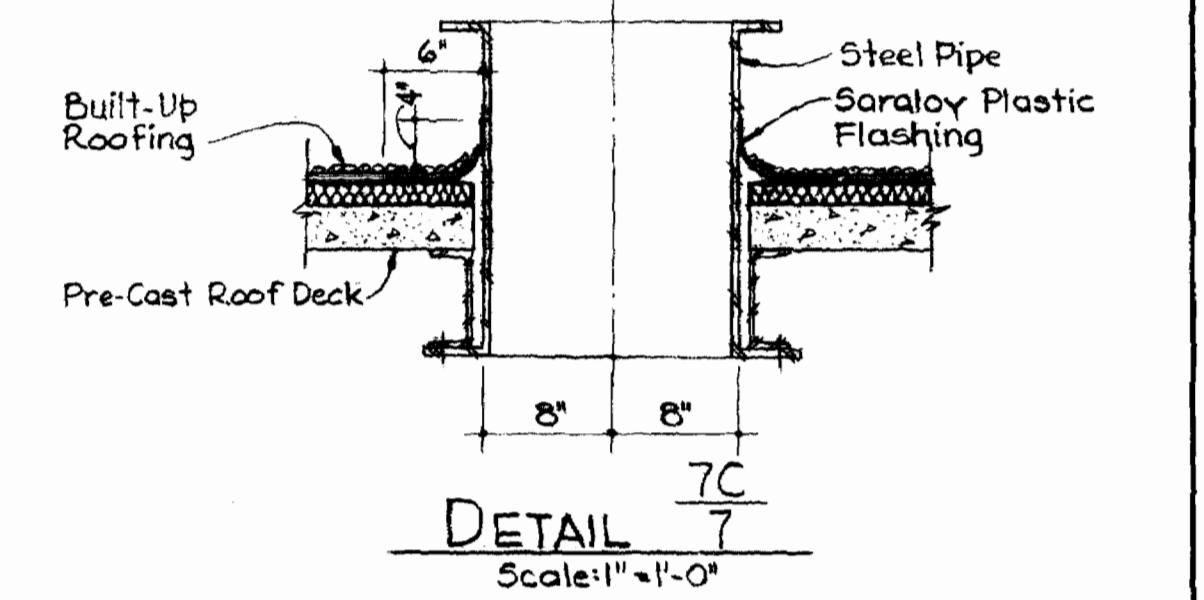
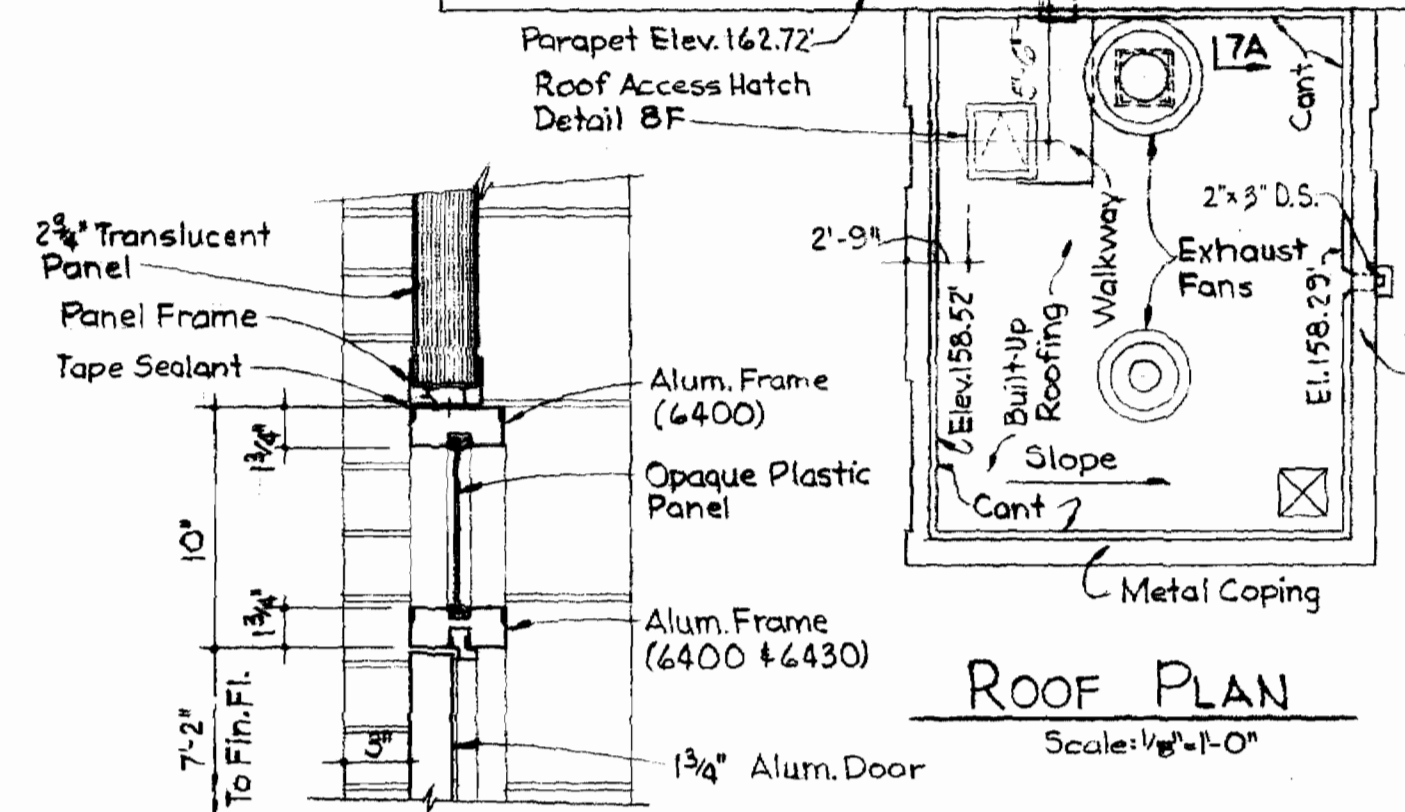
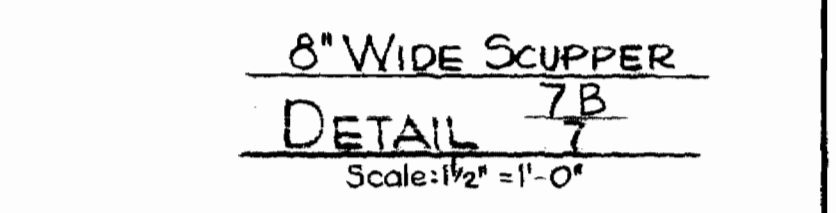
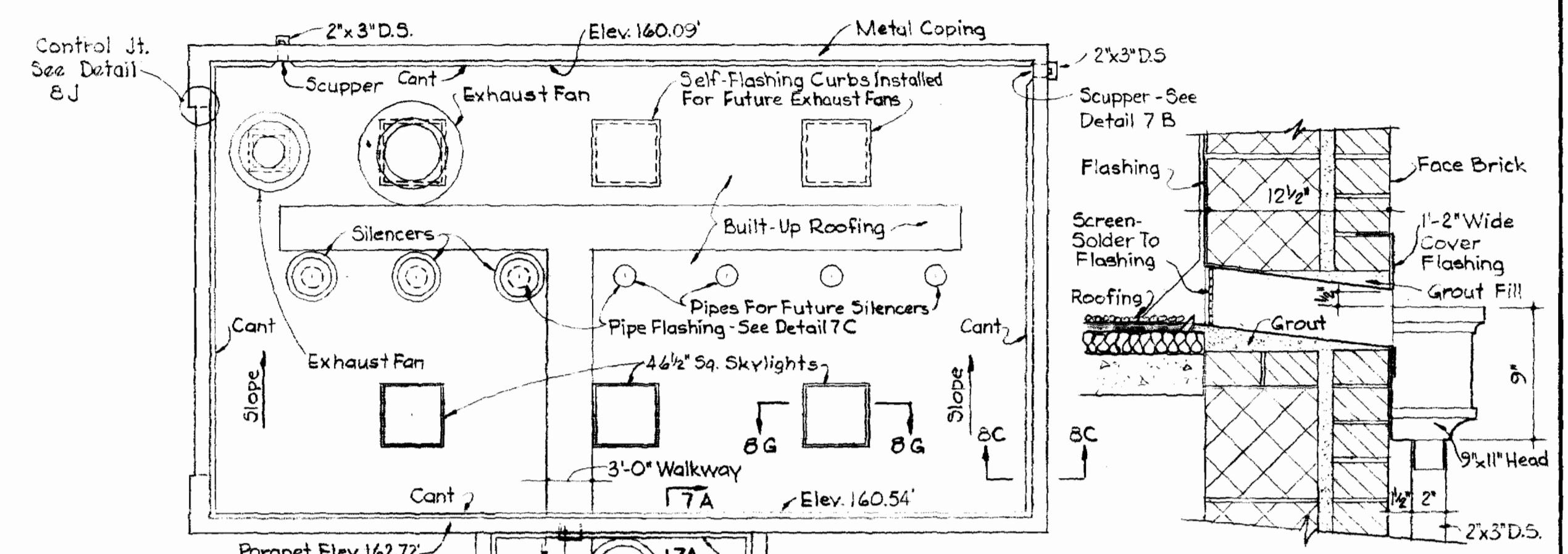
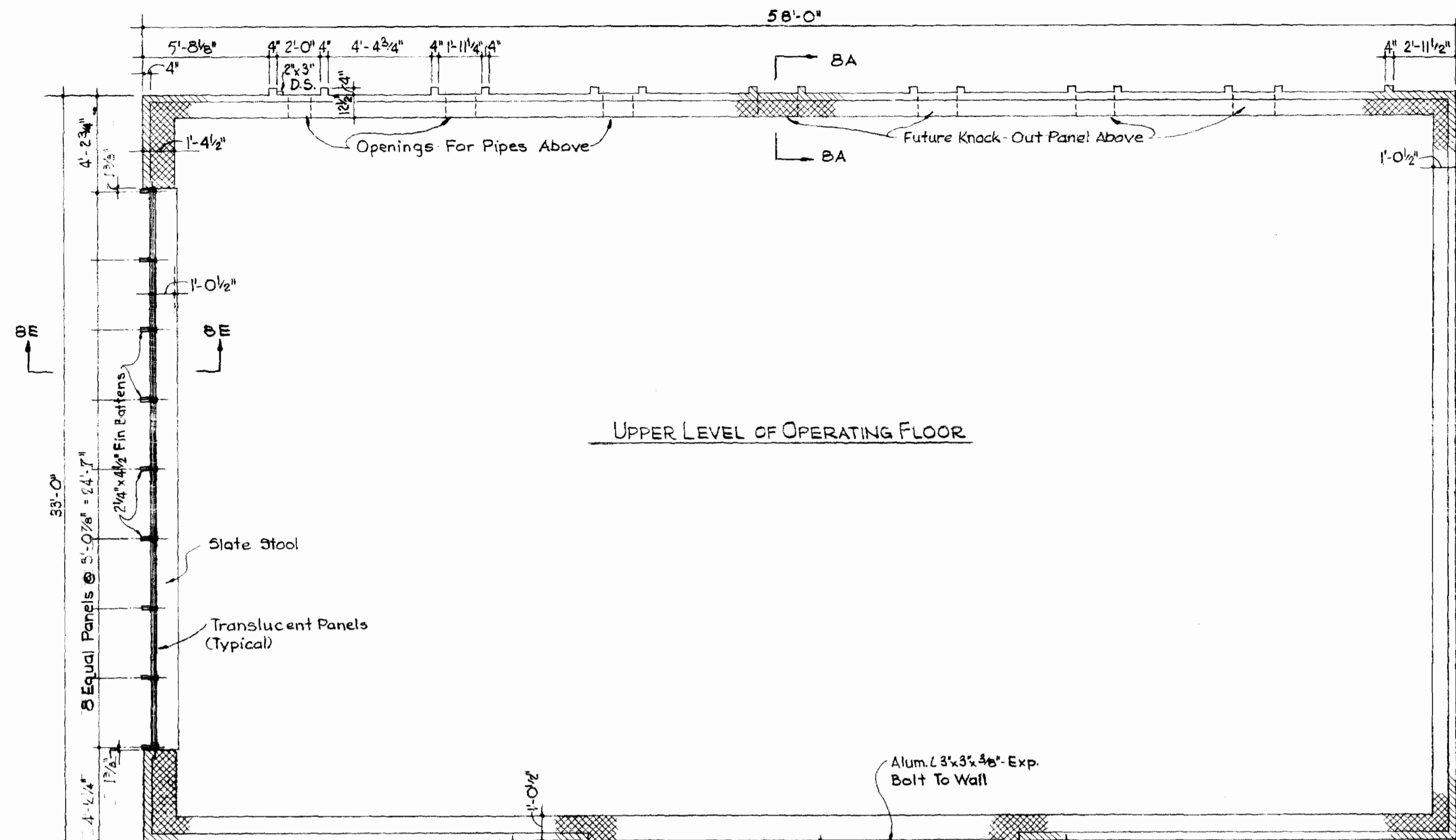
SAVAGE SEWAGE
TREATMENT PLANT ADDITION NO. 1

DRAWING NO. **6**
OF **33**
SCALE: AS SHOWN

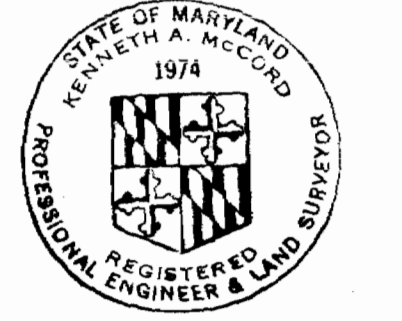
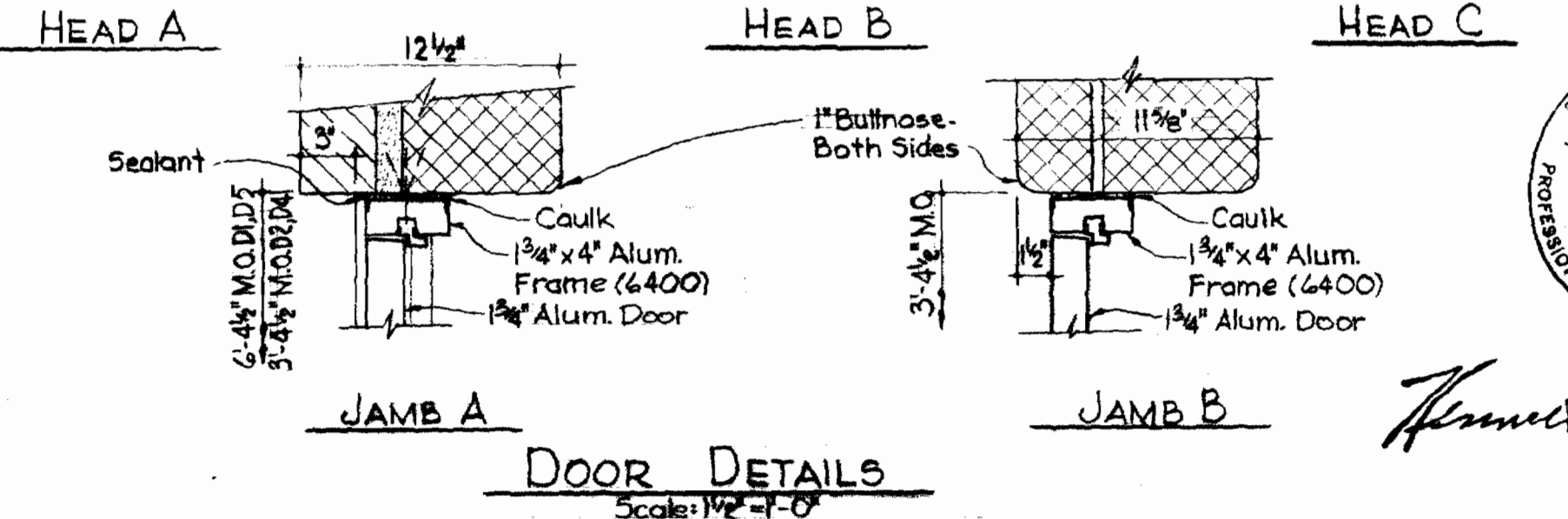
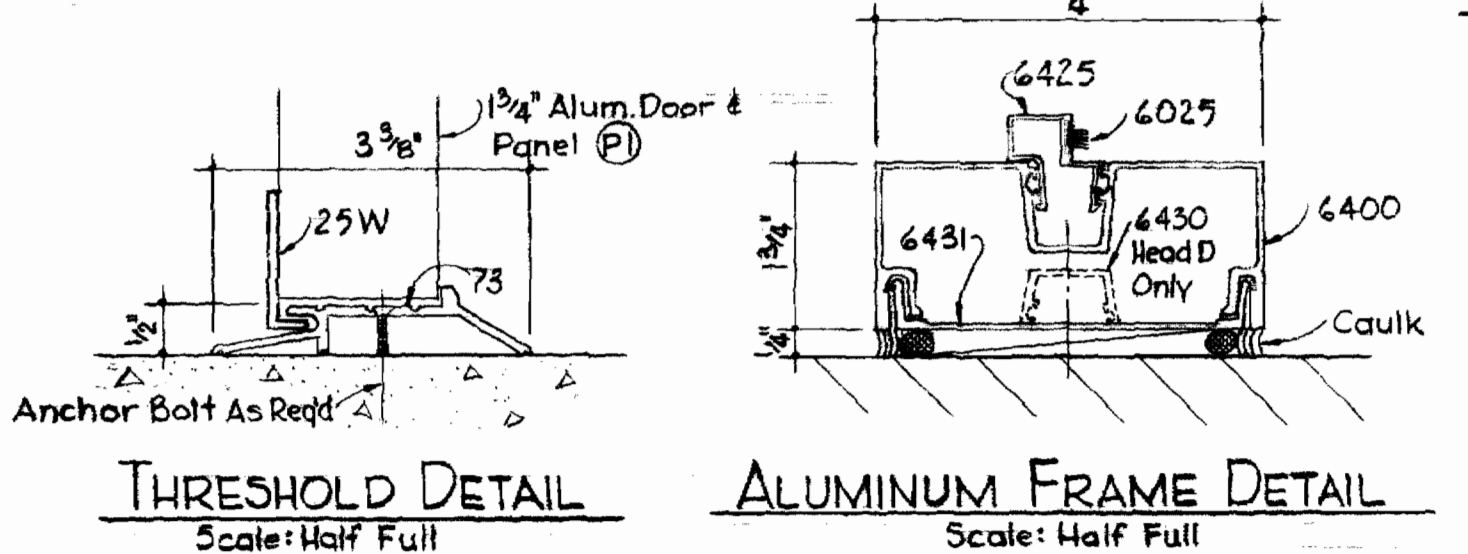
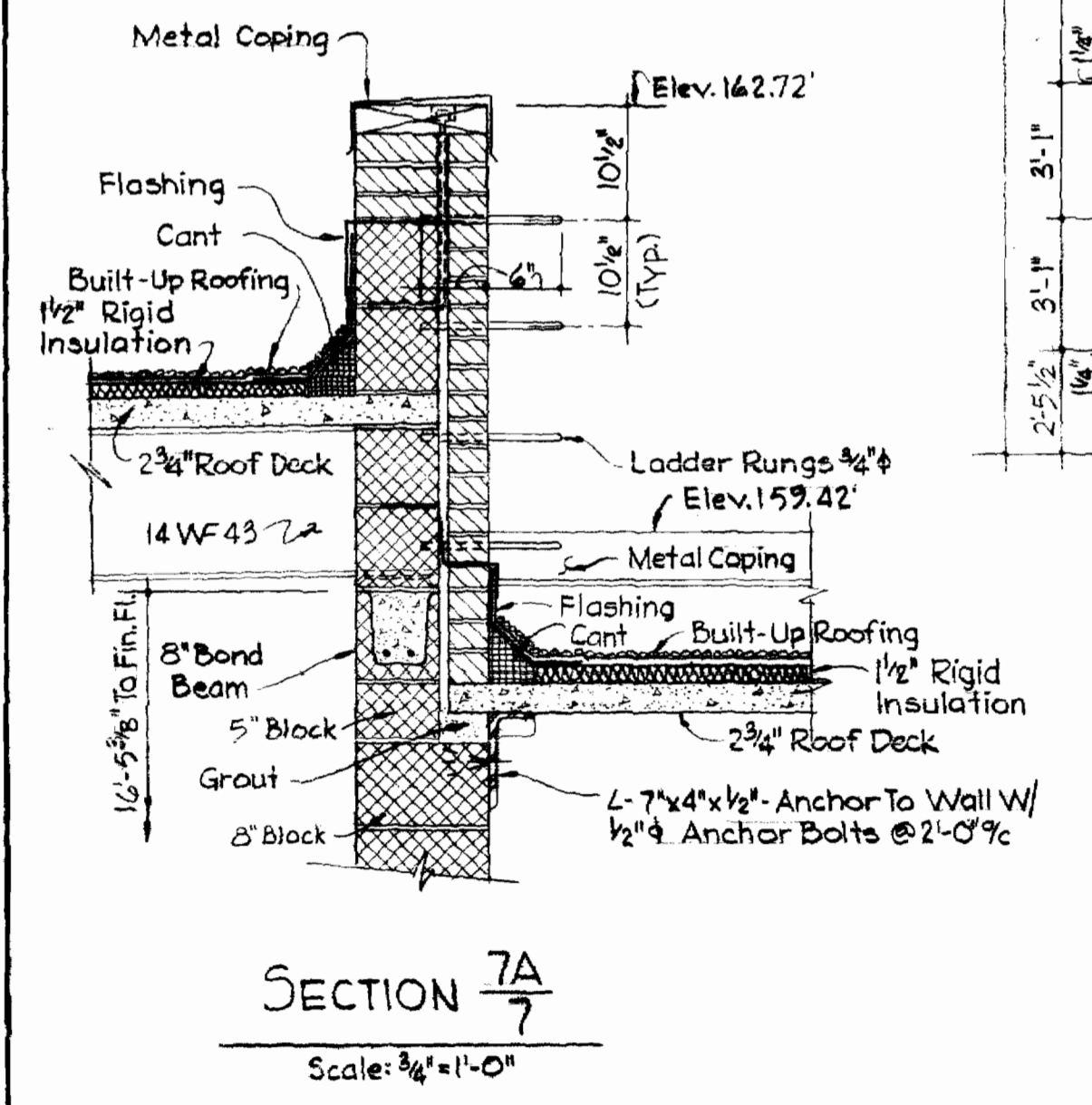
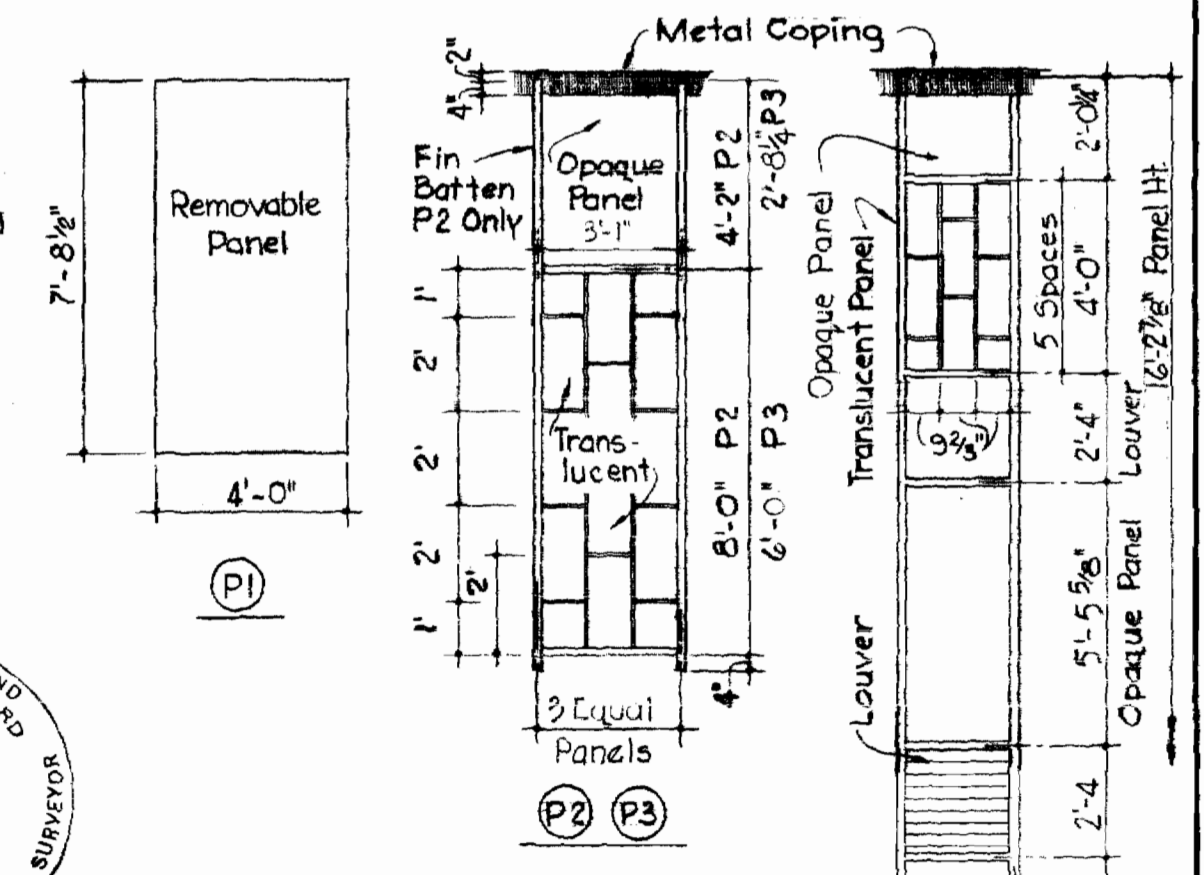
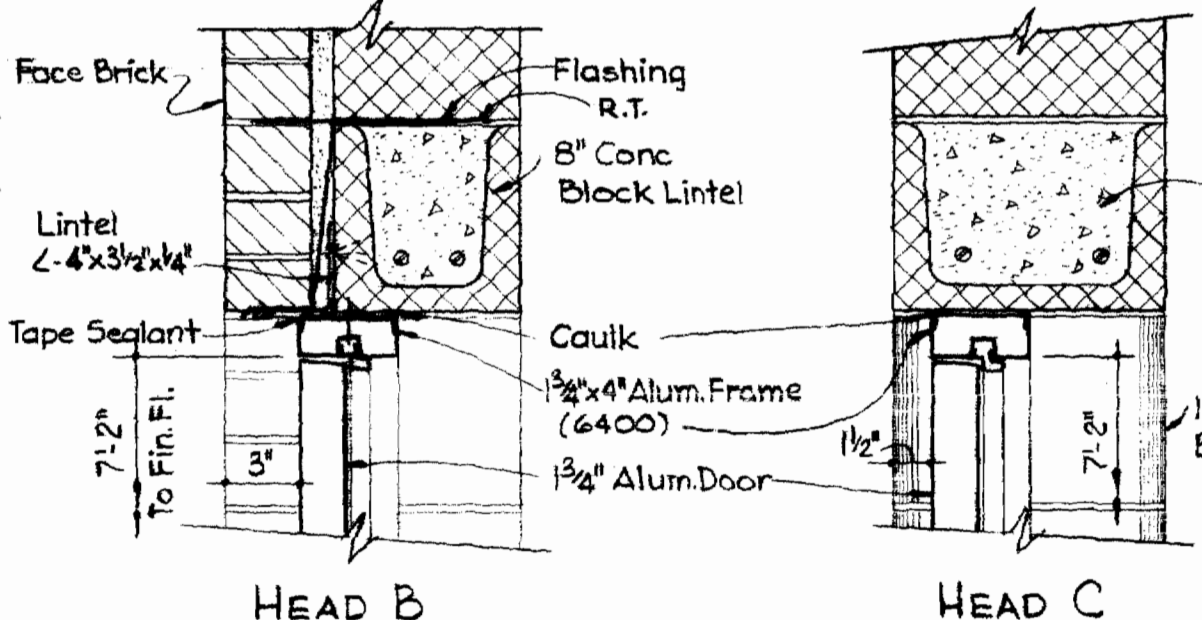
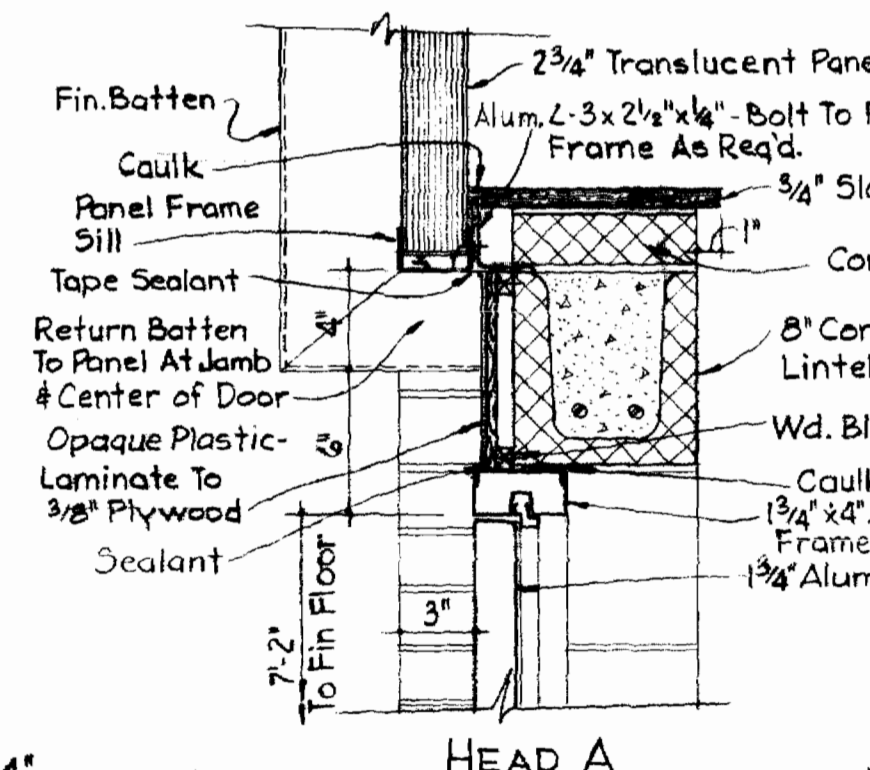
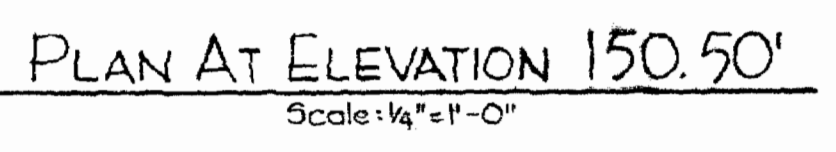
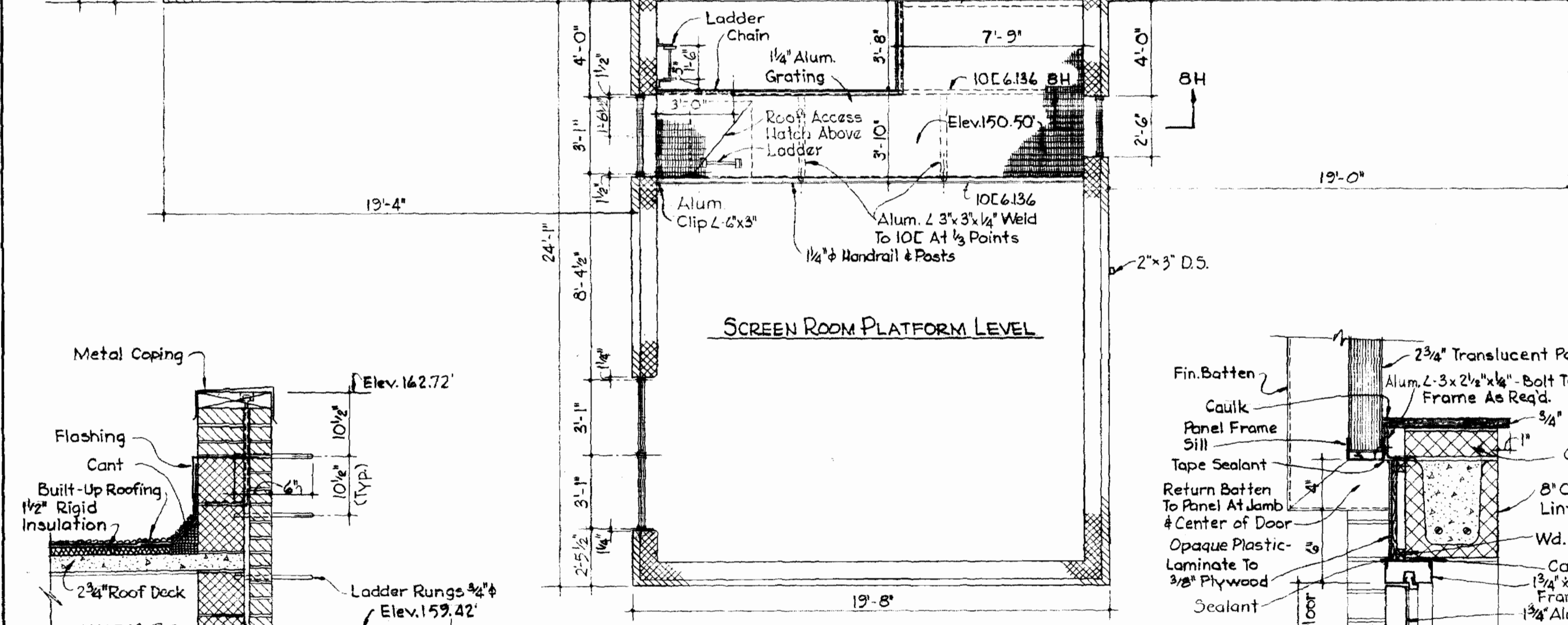
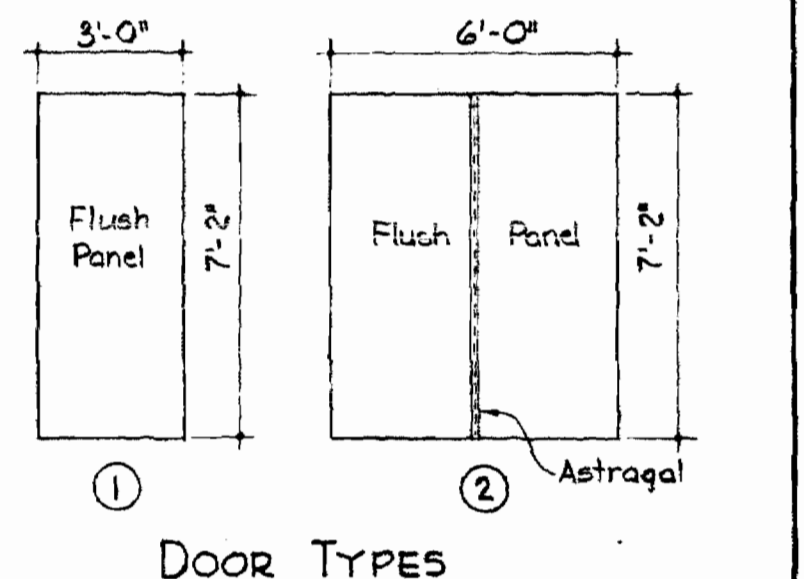
AS BUILT 3/2/72

237-S/6

S



DOOR SCHEDULE								
NO	SIZE	THK	TYPE	MAT'L	JAMB	HEAD	THRESH.	REMARKS
D1	2'-3" x 7'	1 3/4"	2	Alum.	A	A	Alum.	
D2	3" x 7'	1 3/4"	1	Alum.	A	B	Alum.	
D3	3" x 7'	1 3/4"	1	Alum.	B	C		No Door Closer
D4	3" x 7'	1 3/4"	1	Alum.	A	D	Alum.	
D5	2'-3" x 7'	1 3/4"	2	Alum.	A	D	Alum.	



Kenneth A. McLeod

237-S/17

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BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
4-11-69
DATE
W O Gilbert
CHIEF ENGINEER

CONTRACT NO. 237-S

ARCHITECTURAL PLAN & DETAILS
BLOWER BLDG. & PUMPING STA.

SAVAGE SEWAGE
TREATMENT PLANT ADDITION NO. 1

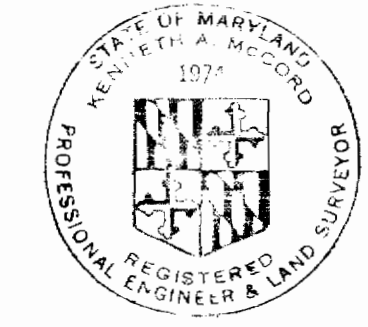
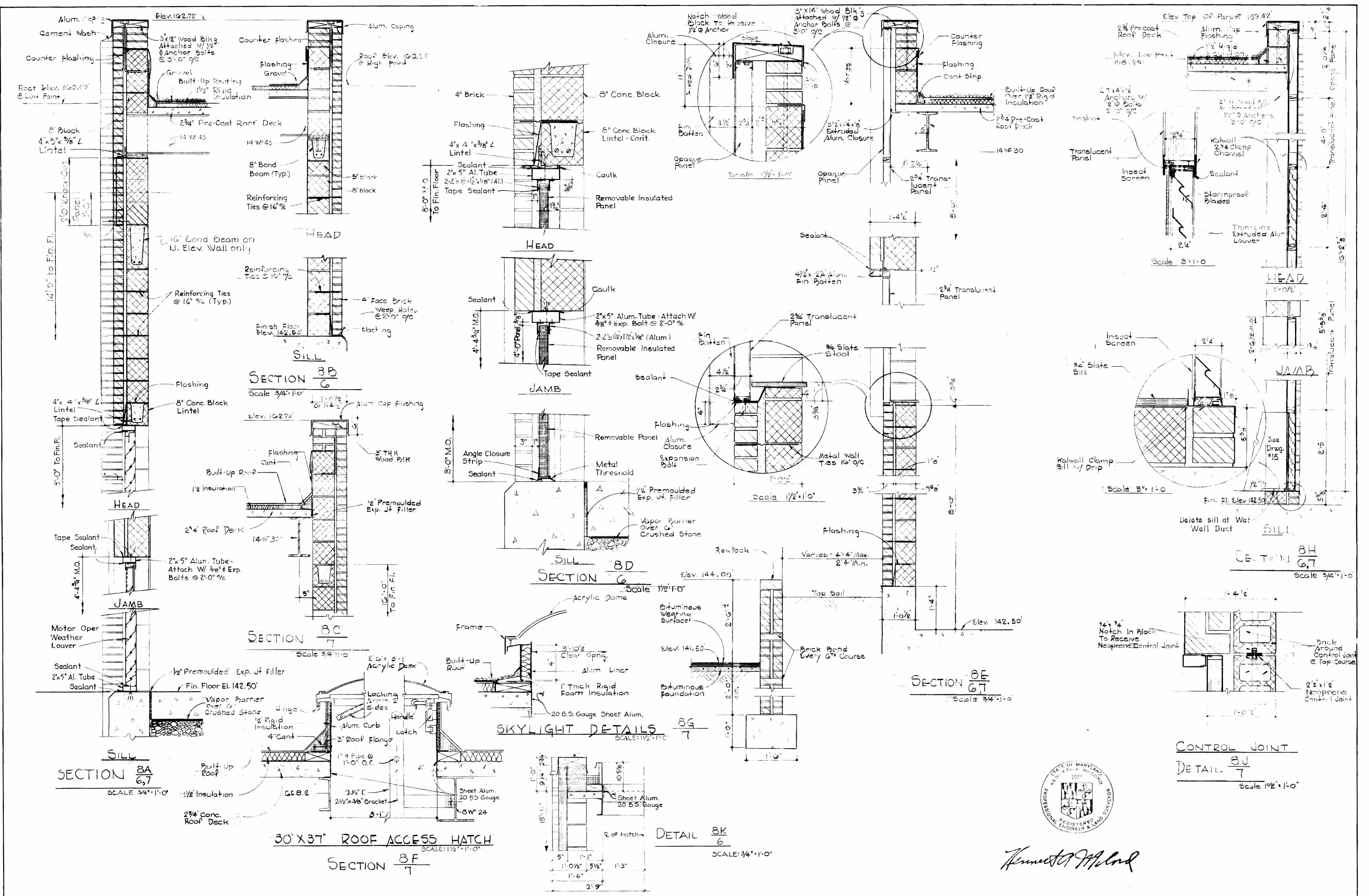
DRAWING NO. 7 OF 33
SCALE: AS SHOWN

AS BUILT 3/2/72

SUSPENDED

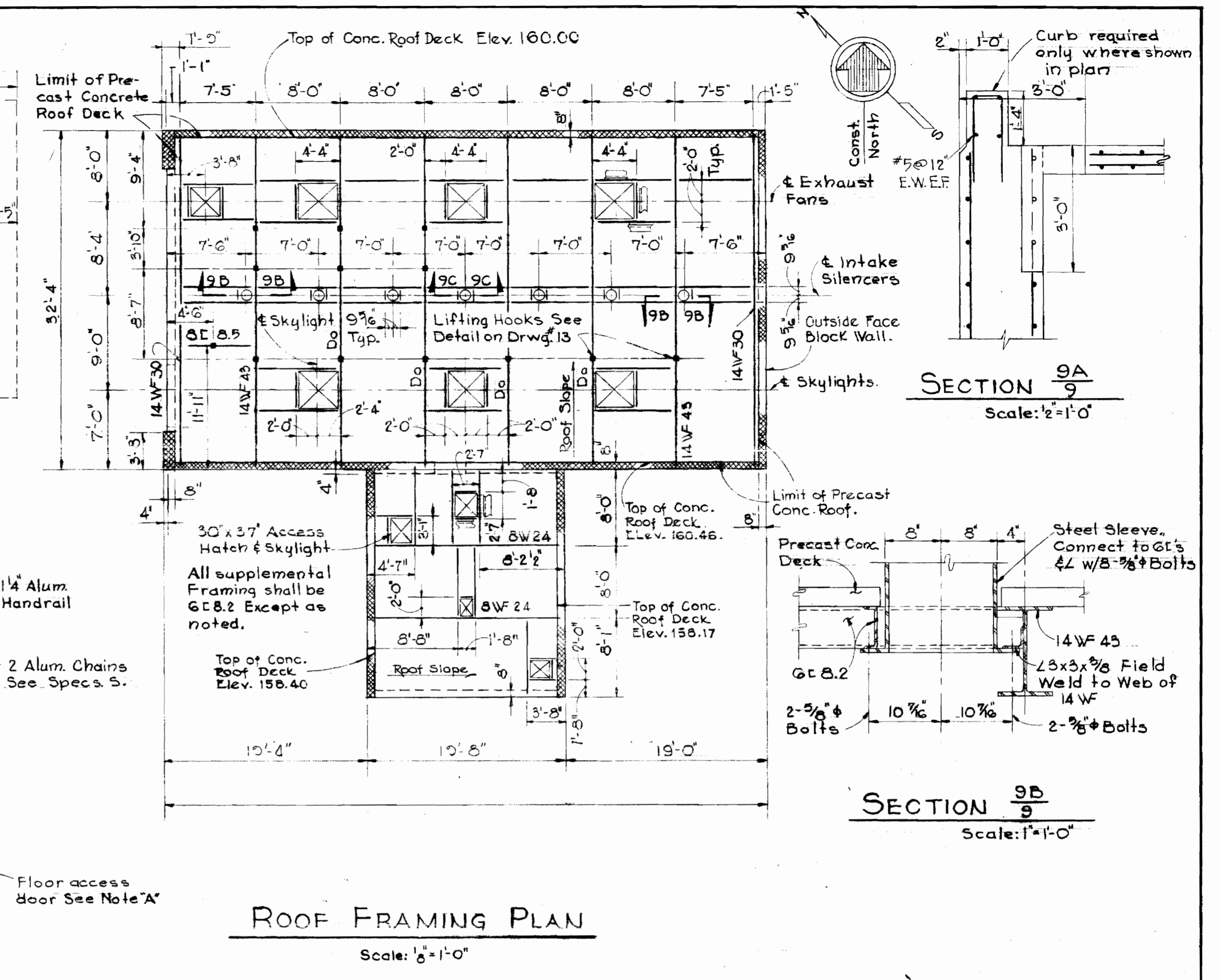
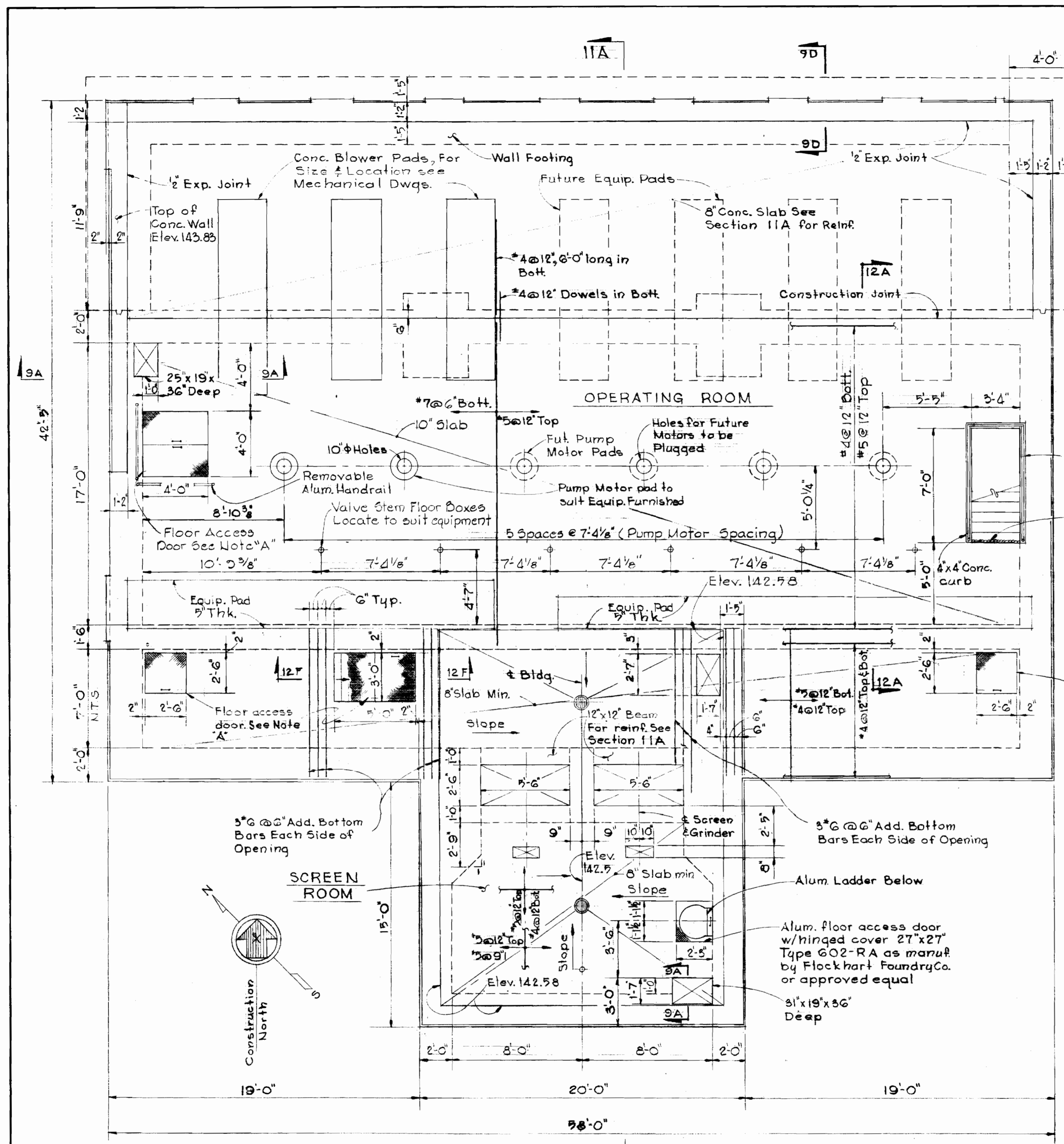
SUSPENDED

SUSPENDED



Kenneth A. Milrod

WHITMAN, REQUARDT & ASSOC. ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS 4-11-69 <i>W. O. Gilbert</i> CHIEF ENGINEER	CONTRACT NO. 237-S	ARCHITECTURAL DETAILS BLOWER BLDG. & PUMPING STA.	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1	DRAWING NO. 8 OF 33 SCALE AS SHOWN
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STRUCTURAL NOTES

FOUNDATION NOTES:

1. ALL FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE SOIL BEARING CAPACITY OF 2000 PSF.
2. ALL EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE ANY GRAVEL AND/OR CONCRETE IS PLACED.
3. FOR MECHANICAL AND/OR ELECTRICAL WORK TO BE INCORPORATED IN FOUNDATION WORK, SEE MECHANICAL AND ELECTRICAL DRAWINGS.
4. BOTTOM OF ALL EXCAVATIONS SHALL RECEIVE A MINIMUM OF 6" OF WELL COMPACTED COARSE AGGREGATE, S.R.C. #2 GRAVEL.
5. A LAYER OF VAPOR BARRIER SHALL BE PLACED ON CRUSHED STONE OR GRAVEL BEFORE ANY CONCRETE IS POURED. SEE SPECIFICATIONS FOR VAPOR BARRIER REQUIREMENTS.
6. ALL EXCAVATIONS MUST BE KEPT DRY. WATER SHALL NOT BE ALLOWED TO STAND IN EXCAVATIONS.
7. SEE SPECIFICATION FOR BACKFILL REQUIREMENTS.

STRUCTURAL STEEL NOTES:

1. ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM DESIGNATION A36.
2. ALL SHOP CONNECTIONS SHALL BE WELDED WITH A233 CLASS E-70 SERIES ELECTRODES. ALL FIELD CONNECTIONS SHALL BE HIGH STRENGTH BOLTED, USING A325 BOLTS, EXCEPT WHERE OTHERWISE NOTED.
3. EXCEPT WHERE OTHERWISE NOTED ON THE DRAWINGS, CONNECTIONS OF FRAMING MEMBERS SHALL BE CAPABLE OF TRANSFERRING THE FULL STRENGTH OF THE MEMBER USING 3/4" DIAMETER HIGH STRENGTH BOLTS, WHERE THREADING IS EXCLUDED FROM SHEAR PLANES. HIGH STRENGTH BOLTED CONNECTIONS SHALL BE DESIGNED AS BEARING TYPE CONNECTIONS. SHOP SIDE OF CONNECTION ANGLES MAY BE FILLET WELDED ALL AROUND, RESULTING IN A CONNECTION OF EQUAL STRENGTH WITH THE BOLTED CONNECTION.
4. ALL STRUCTURAL STEEL IS DESIGNED AND SHALL BE FABRICATED IN ACCORDANCE WITH THE CURRENT A.I.S.C. SPECIFICATIONS FOR BUILDINGS.
5. THE CONTRACTOR SHALL SUBMIT ERECTION PLANS AND SHOP DETAILS BEFORE PROCEEDING WITH FABRICATION.
6. ALL STRUCTURAL STEEL SHALL BE GIVEN ONE SHOP COAT OF PAINT.

DESIGN LIVE LOADS:

ROOFS - 30 PSF
STRUCTURAL SLABS - EQUIPMENT LOAD PLUS 150 PSF ON AREAS NOT COVERED BY EQUIPMENT.

Note A:
Floor access doors shall be aluminum, w/hinged covers and lock, size as shown on plan. Type G02-RA as manuf. by Flockhart Foundry Co. or approved equal.



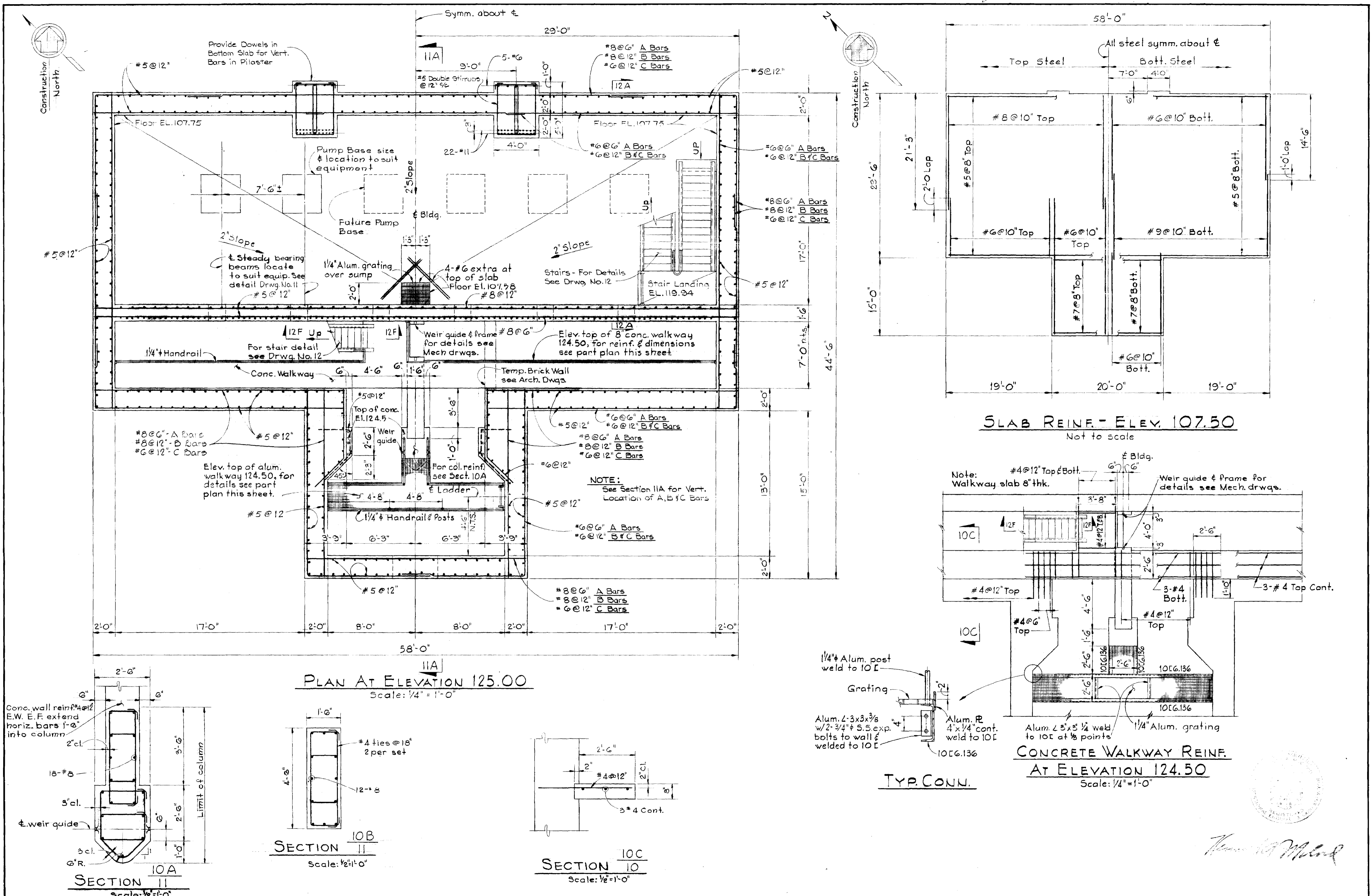
Howard M. Clark

WHITMAN REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS DATE: <i>10/17/74</i> CHIEF ENGINEER	CONTRACT NO. <u>237-S</u>	STRUCTURAL PLAN BLOWER BLDG. PUMPING STA.	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO.1	DRAWING NO. <u>9</u> OF <u>33</u>	SCALE AS SHOWN
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11/2/67

11/2/67

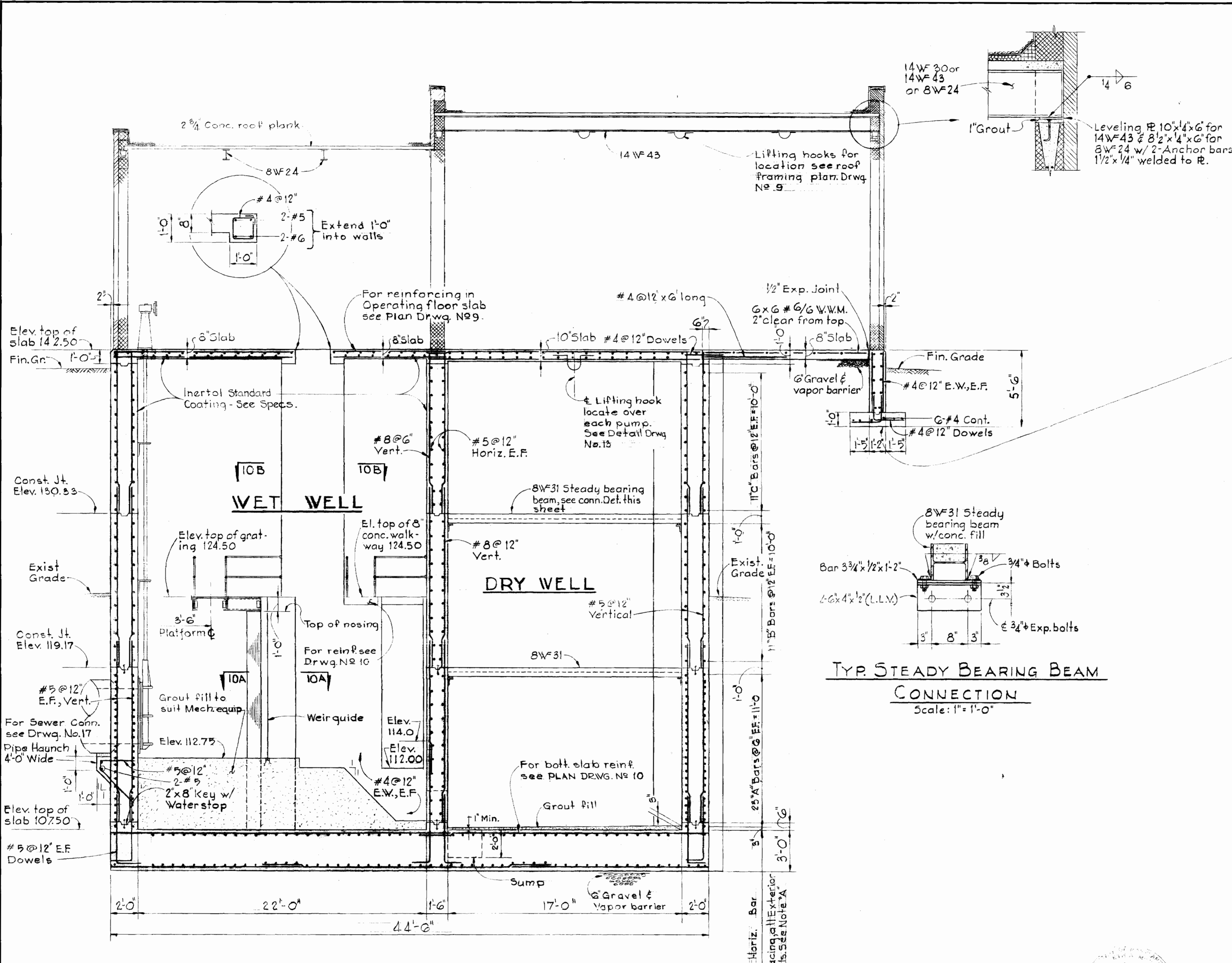
11/2/67



WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS 4-11-69 <i>W. O. Roberts</i> CHIEF ENGINEER	CONTRACT NO. 237-S	STRUCTURAL SECTION BLOWER BLDG. PUMPING STA.	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1	DRAWING NO. 10 OF 33	SCALE AS SHOWN
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SUPPORT

SUPPORT



SPECIAL NOTE:
 Before pouring of concrete footing, compaction tests will be made of compacted fill in immediate vicinity and certified by the Engineer as meeting specification requirements.

- CONCRETE NOTES:**
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS. SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.
 - ALL REINFORCEMENT STEEL SHALL BE INTERMEDIATE GRADE (ASTM A-615-68; Grade 40).
 - UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COVER FOR REINFORCEMENT SHALL BE AS FOLLOWS:
 - UNFORMED CONCRETE BOTTOM BARS IN FOOTINGS AND SLABS ON EARTH, ROCK, GRAVEL OR STONE - 3 INCHES.
 - BEAM STIRRUPS = 1 1/2"
 - SUBMERGED CONCRETE FORMED WALLS TOP BARS IN FOOTINGS, STIRRUPS, AND BOTTOM BARS OF SLABS OVER WATER = 2 INCHES
 - TOP AND BOTTOM OF EXTERIOR SLABS NOT IN CONTACT WITH LIQUID OR EARTH = 1 1/2 INCHES.
 - INTERIOR SLABS NOT OVER WATER, TOP AND BOTTOM BARS = 3/4 INCHES OTHERWISE NOTED.
 - ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.
 - CONCRETE SLABS AND WALLS SHALL BE POURED BETWEEN INDICATED JOINTS ALLOWING A MINIMUM PERIOD OF 3 DAYS TO ELAPSE BETWEEN ADJACENT POURS.
 - CONSTRUCTION AND EXPANSION JOINTS SHALL BE AS DETAILED ON THE DRAWINGS AND NO ADDITIONAL JOINTS SHALL BE USED NOR ANY OMITTED, EXCEPT BY WRITTEN AUTHORIZATION OF THE ENGINEER.
 - REINFORCED CONCRETE IS DESIGNED AND SHALL BE DETAILED AND CONSTRUCTED IN ACCORDANCE WITH CURRENT ACI SPECIFICATION (ACI 318-63).
 - THE CONTRACTOR SHALL SUBMIT SHOP DETAILS OF REINFORCING STEEL BEFORE PROCEEDING WITH FABRICATION.
 - FOR SLABS RECEIVING LIQUID FLOOR HARDENER, SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
 - FOR NOTES PERTAINING TO INDIVIDUAL STRUCTURES, SEE DRAWINGS FOR THOSE STRUCTURES.
 - ALL REINFORCING BAR LAPS SHALL BE 30 BAR DIAMETERS, UNLESS OTHERWISE NOTED.
 - ALL WATER STOPS SHALL BE 3/8" ^{PCV (See Add # 4)} ~~THICKNESS~~ 9" WIDE, OF THE 2-BULB TYPE. SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.
 - SEE CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL IMBEDDED ITEMS, SUCH AS SLEEVES, ANCHORS, ELECTRICAL CONDUITS, OPENINGS, CHASES, ETC., WHICH INTERFERE WITH CONCRETE CONSTRUCTION. NO CONCRETE MAY BE POURED BEFORE ALL EMBEDDED ITEMS ARE IN PLACE AND OPENINGS BOXED OUT.
 - WHERE GROUT IS TO BE PLACED ON THE BOTTOM SLAB OF BASINS, THE GROUND WATER TABLE SHALL BE KEPT BELOW THE BOTTOM OF THE SLAB UNTIL CURING WATER HAS BEEN PLACED. THE GROUT SHALL BE CURED BY FILLING THE BASIN WITH WATER TO A LEVEL ABOVE THE GROUND WATER TABLE AND MAINTAINING THIS WATER LEVEL, IN THE BASIN FOR THE SPECIFIED CURING PERIOD.

- STRUCTURAL ALUMINUM NOTES:**
- ALL ALUMINUM IN CONTACT WITH CONCRETE SHALL, BEFORE ERECTION, BE HEAVILY COATED, AS SPECIFIED.
 - ALL STRUCTURAL ALUMINUM SHALL BE ALLOY 6061-T6.
 - ALL STRUCTURAL ALUMINUM IS DESIGNED AND SHALL BE FABRICATED IN ACCORDANCE WITH THE CURRENT SPECIFICATIONS OF THE ALUMINUM ASSOCIATION.
 - ALL ALUMINUM GRATINGS SHALL BE CAPABLE OF SUPPORTING A LIVE LOAD OF 150 PSF.

SECTION 11A
 Scale 1/4" = 1'-0"

NOTE: 'A'
 For Size & Length of 'A', 'B' & 'C' Bars. See Plan on Sheet No. 10



Howard County Seal

WHITMAN, REQUARDT & ASSOCIATES
 ENGINEERS
 1304 ST. PAUL ST.
 BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
 4-11-69
 DATE
W.O.P. Herb
 CHIEF ENGINEER

CONTRACT NO. 237-S

STRUCTURAL SECTION
 BLOWER BLDG. & PUMPING STA.

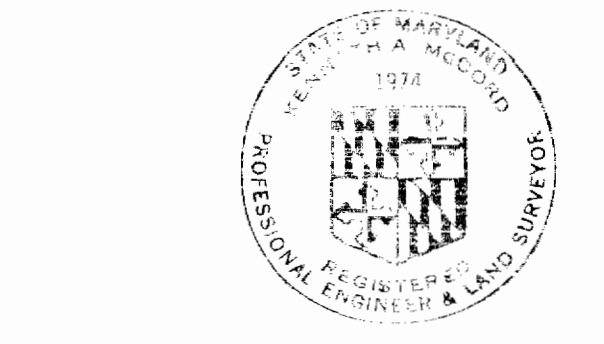
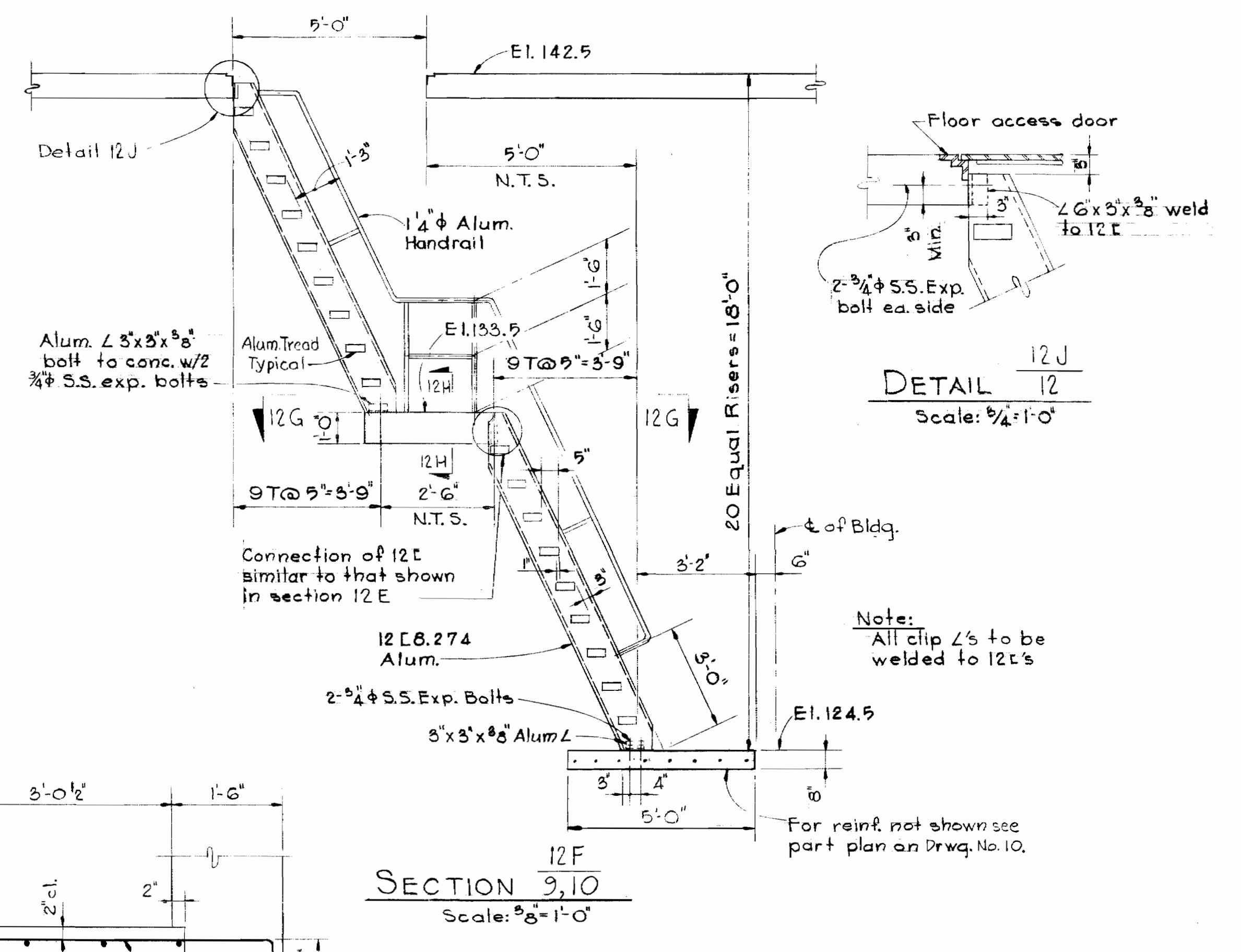
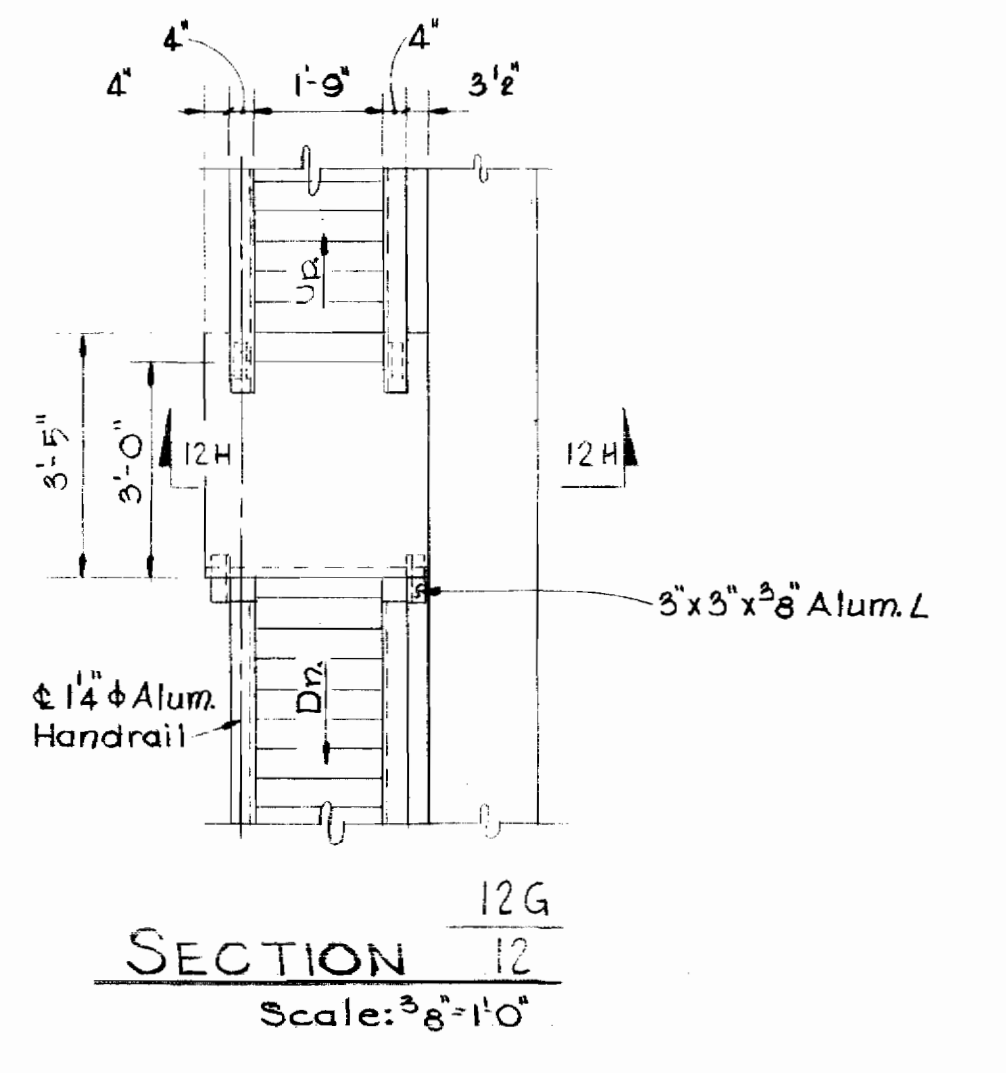
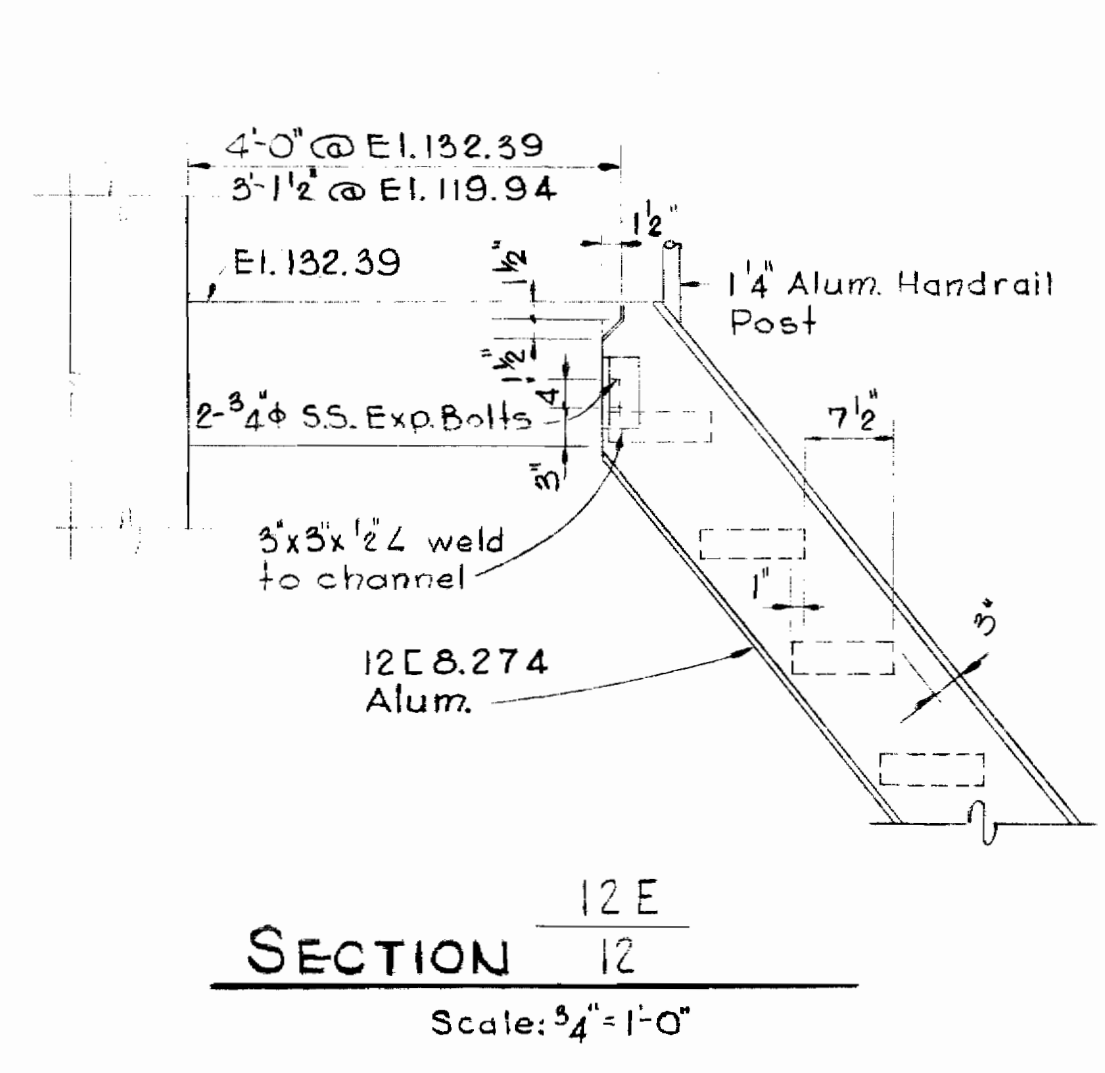
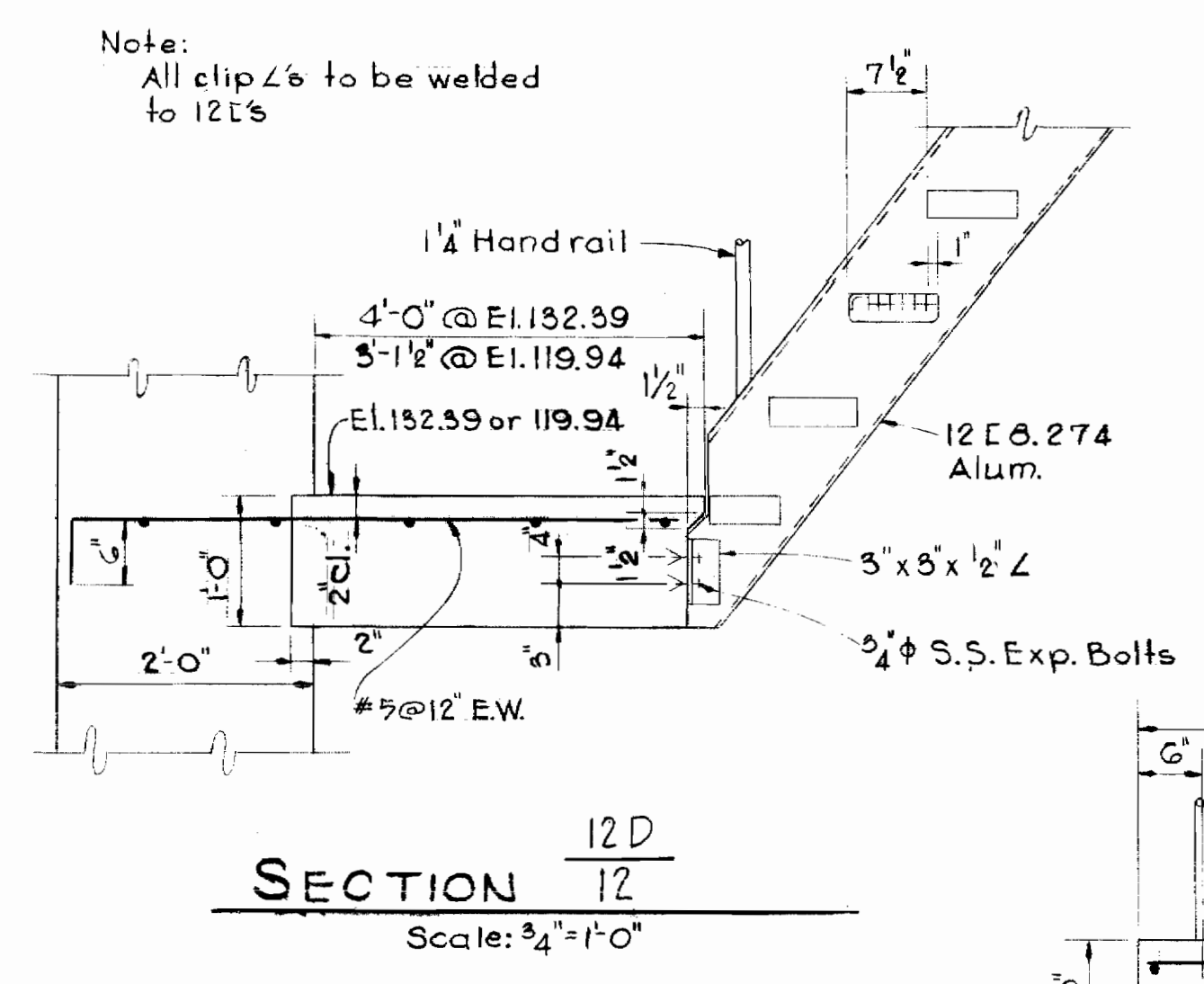
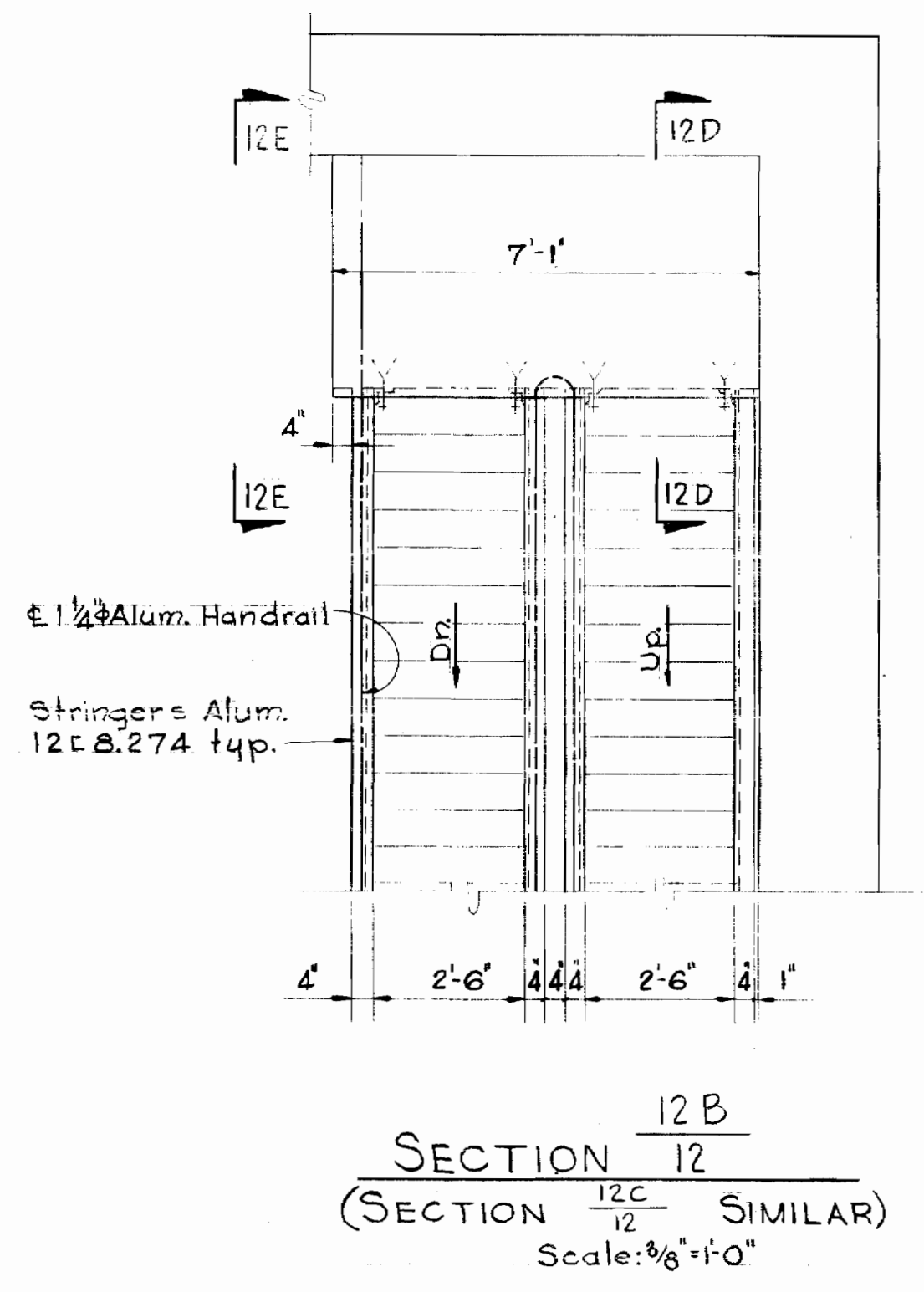
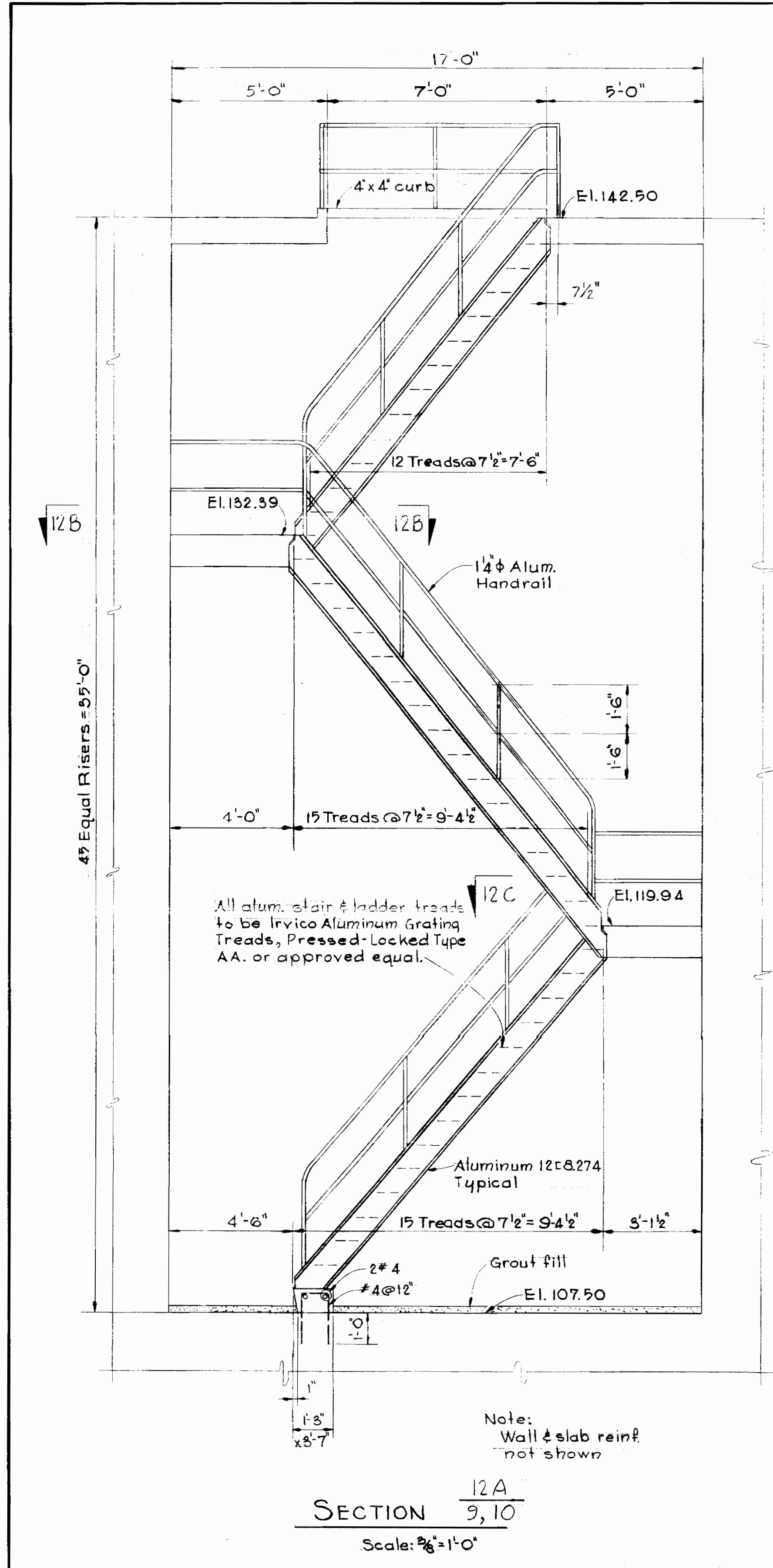
SAVAGE SEWAGE
 TREATMENT PLANT ADDITION NO. 11

DRAWING NO. 11	SCALE AS SHOWN
OF 33	

SUSPENDED

SUSPENDED

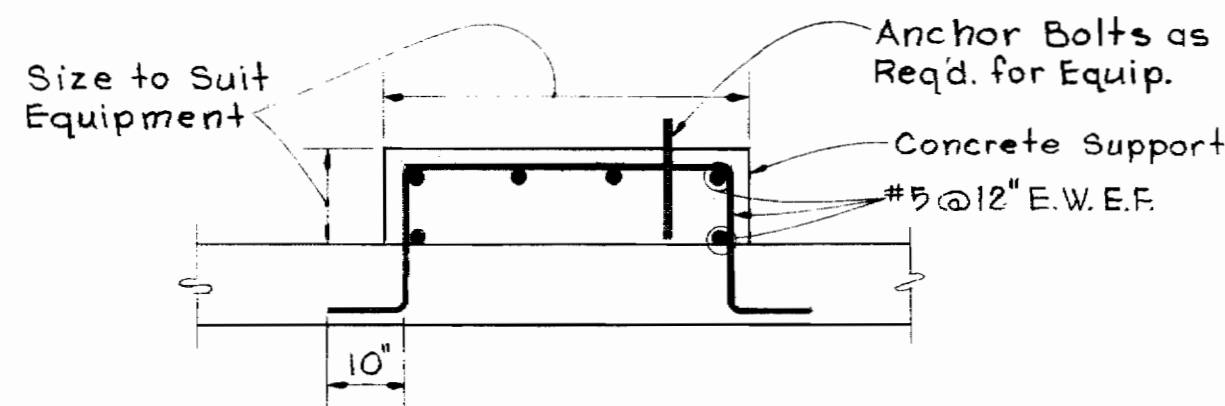
SUSPENDED



Kenneth M. Lind

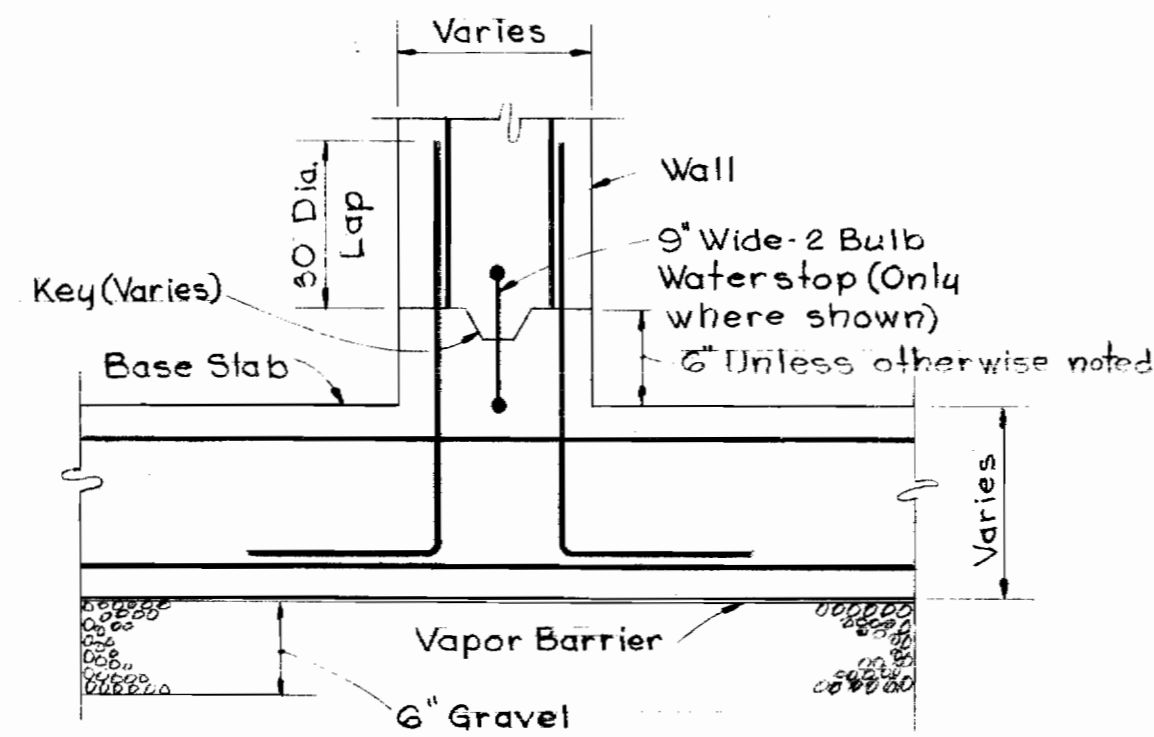
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS DATE <u>4-11-69</u> <i>W.O. Lind</i> CHIEF ENGINEER	CONTRACT NO. <u>237-S</u>	STRUCTURAL DETAILS BLOWER BLDG. & PUMPING STA.	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1	DRAWING NO. <u>12</u> OF <u>33</u>	SCALE AS SHOWN
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237-S/12



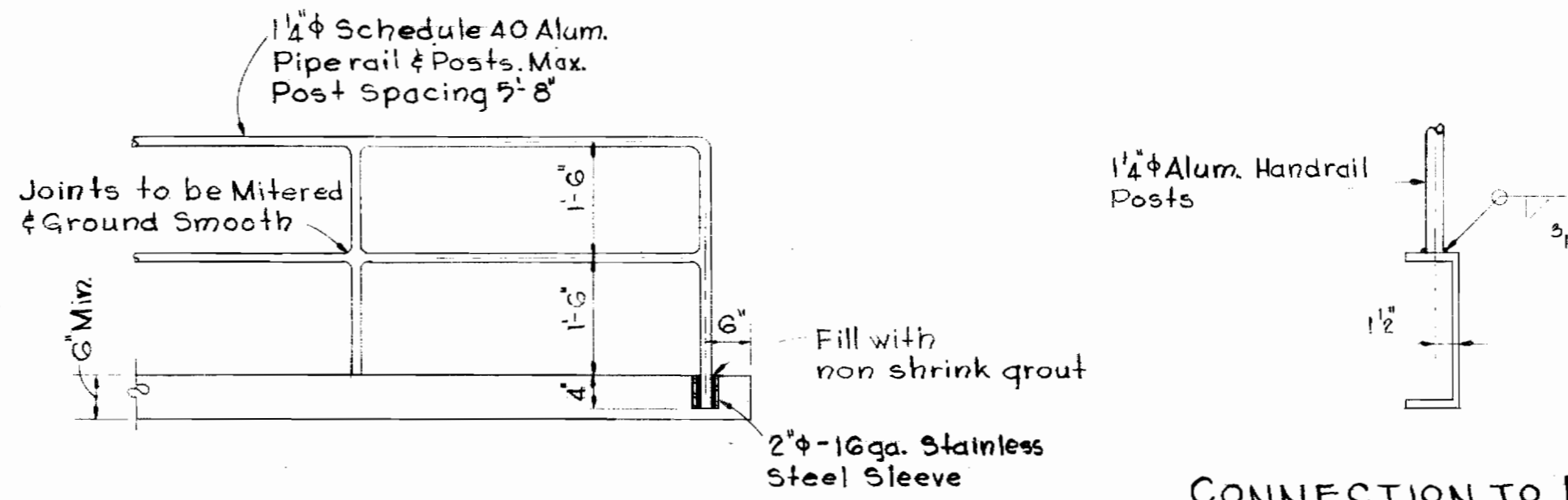
Note:
See Mechanical and Electrical Drawing for Size, Location and Quantity of "Concrete Equip. Supports".

EQUIPMENT PAD DETAIL
No Scale

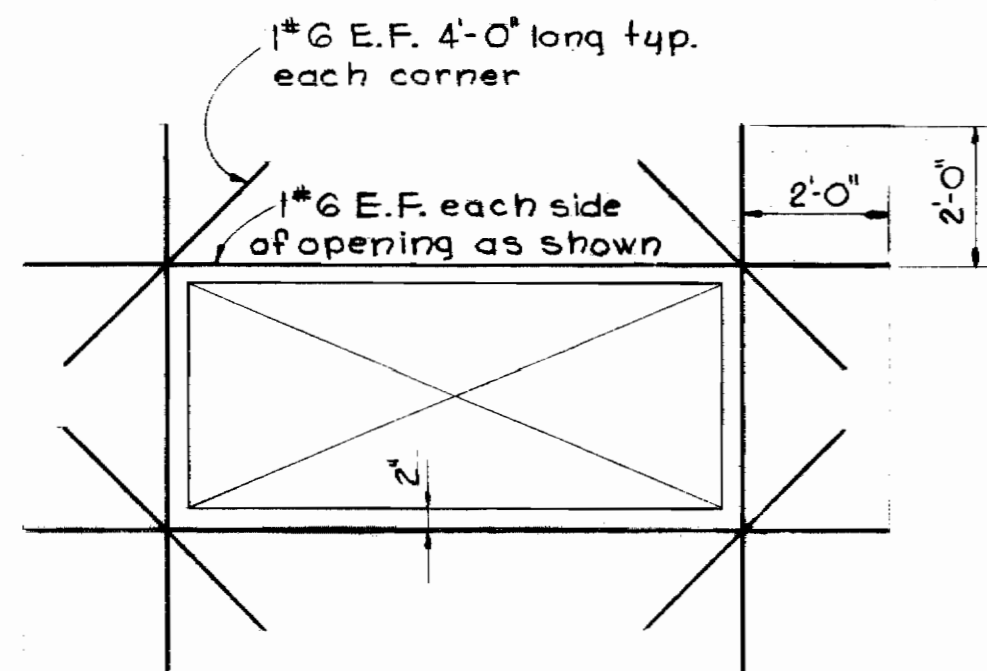


Note:
Except where otherwise shown on the Drawings, these Std Details shall be used.

HORIZONTAL CONSTRUCTION JOINT IN WALLS & BASE SLAB
No Scale

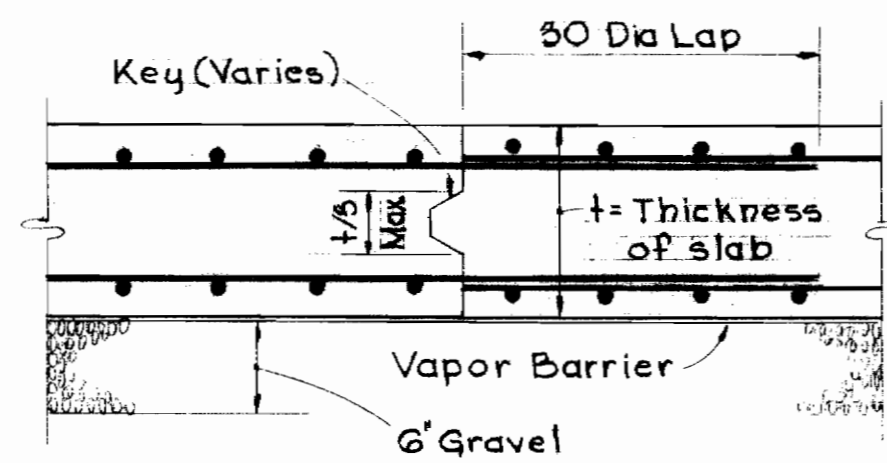


ALUMINUM HANDRAIL DETAILS
No Scale

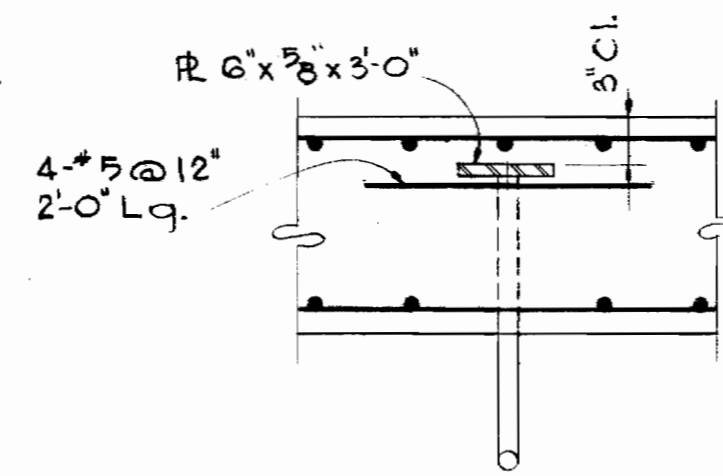


Note:
Reinforcement around openings is as shown above, except where otherwise shown.

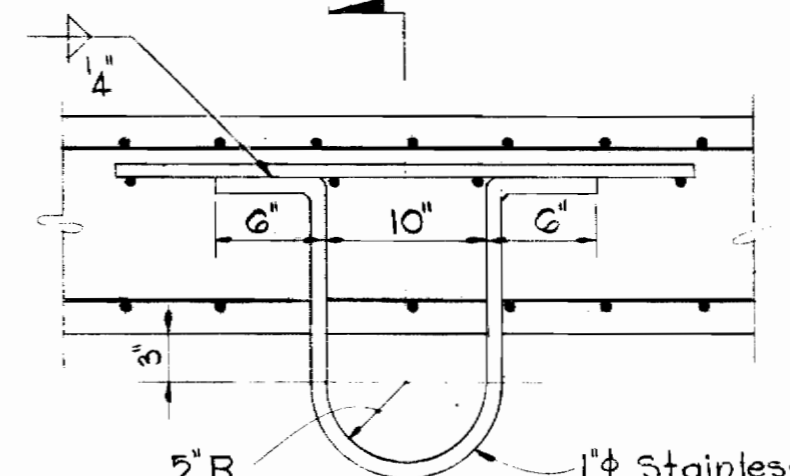
REINFORCING AT OPENINGS IN WALLS OR SLABS
No Scale



CONSTRUCTION JOINT IN SLABS ON GRADE
No Scale

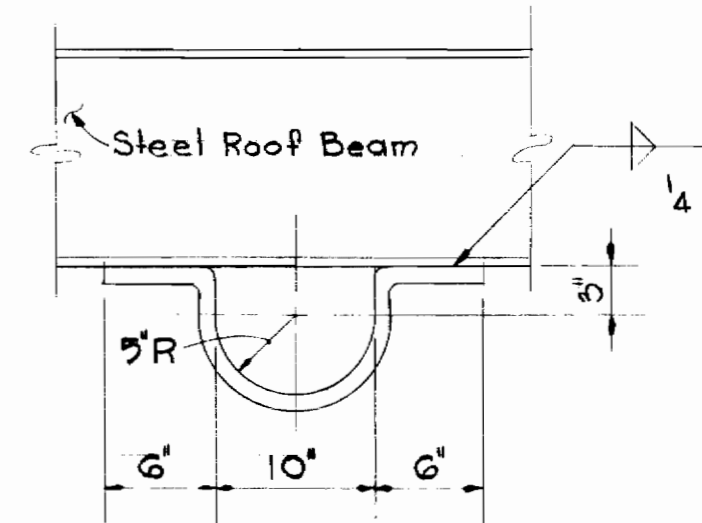


SECTION



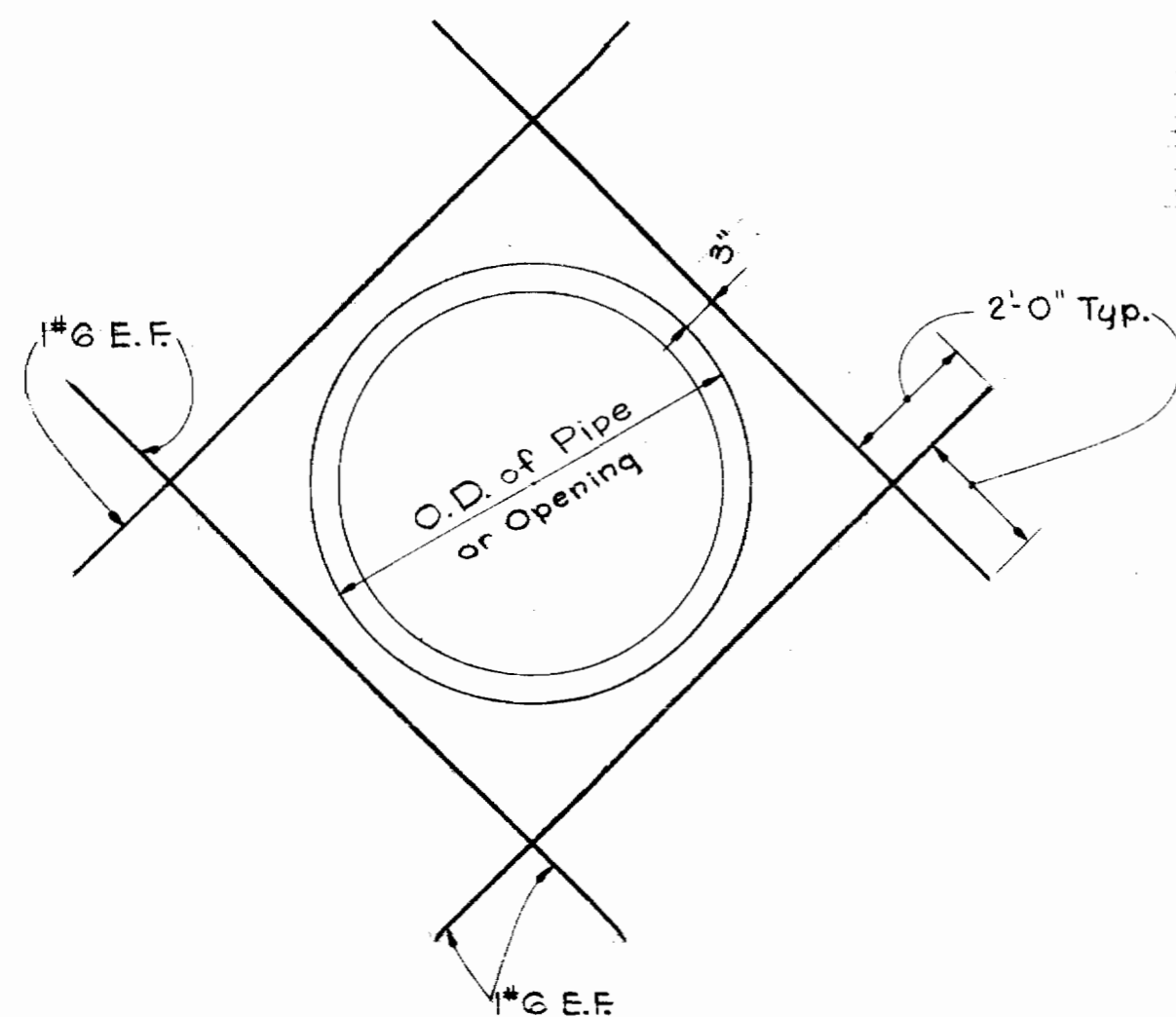
ELEVATION

CONCRETE MOUNTING

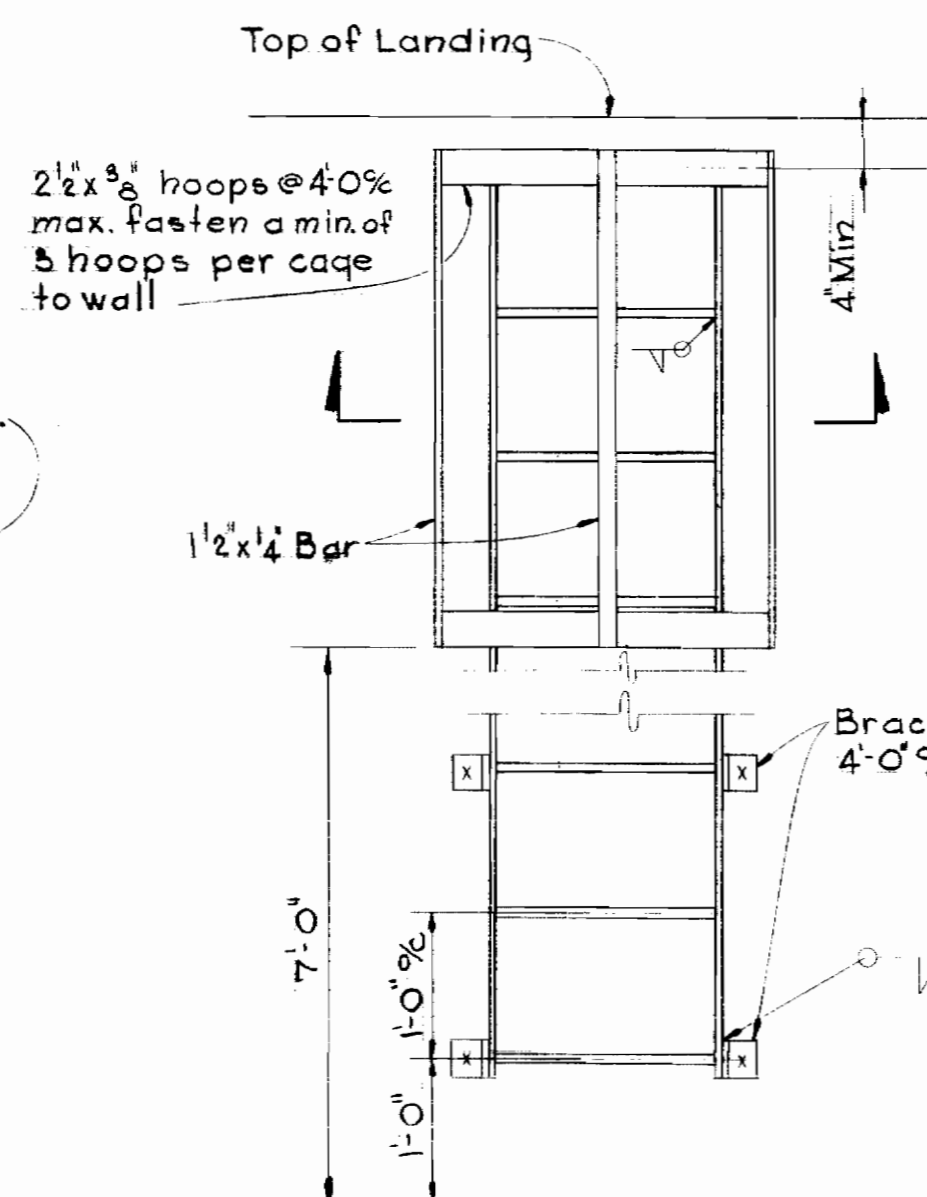


ELEVATION

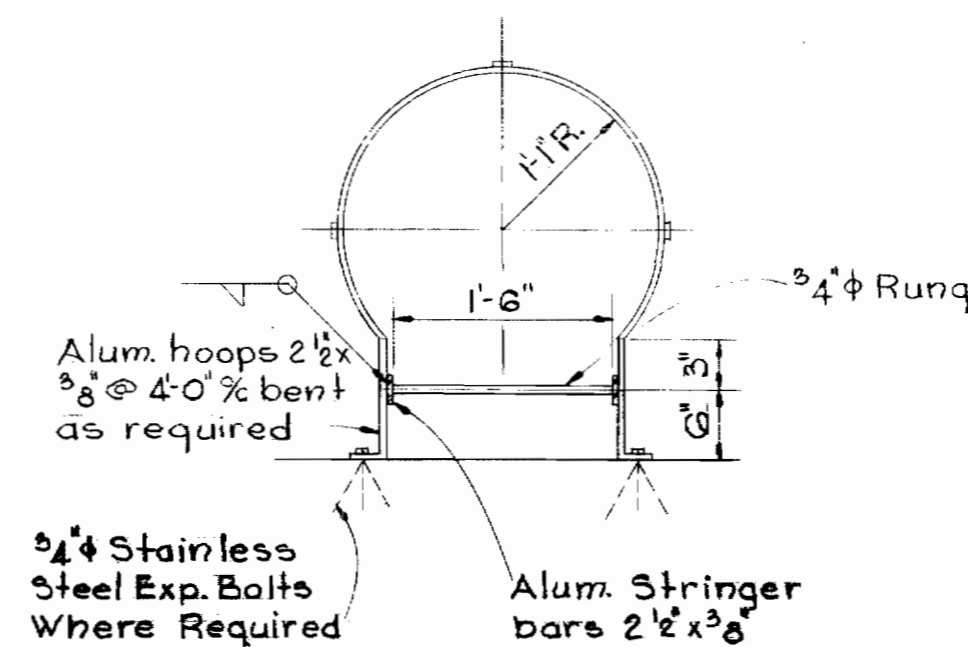
STEEL MOUNTING



REINFORCING AT PIPES
No Scale



ELEVATION



SECTION

ALUMINUM LADDER DETAIL
No Scale



Kenneth A. McCord

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
DATE 4-11-69
W. O. Gilbert
CHIEF ENGINEER

CONTRACT NO. 237-S

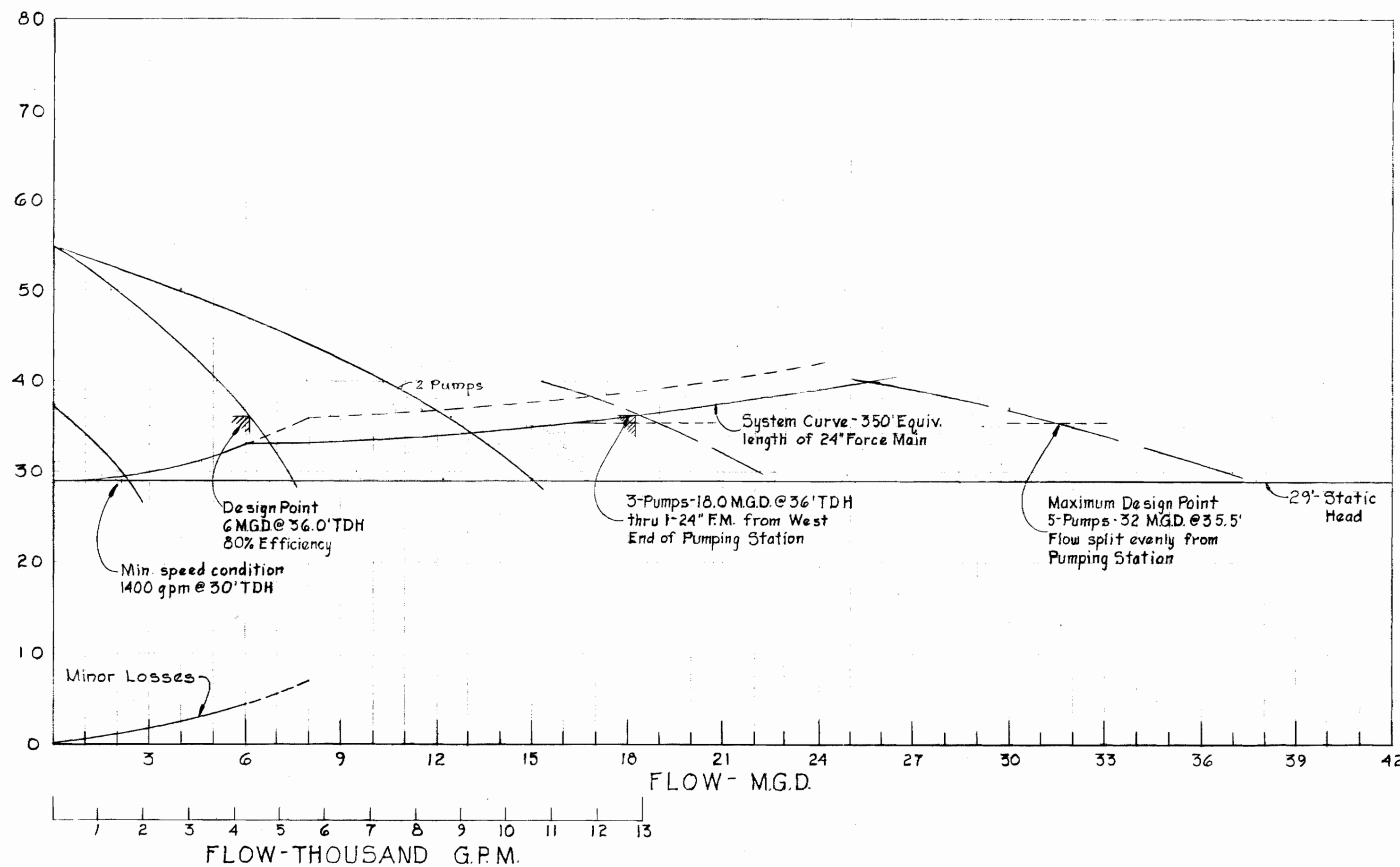
STRUCTURAL DETAILS
BLOWER BLDG. & PUMPING STA.

SAVAGE SEWAGE
TREATMENT PLANT ADDITION NO. 1

DRAWING NO. 13 OF 33
SCALE AS SHOWN

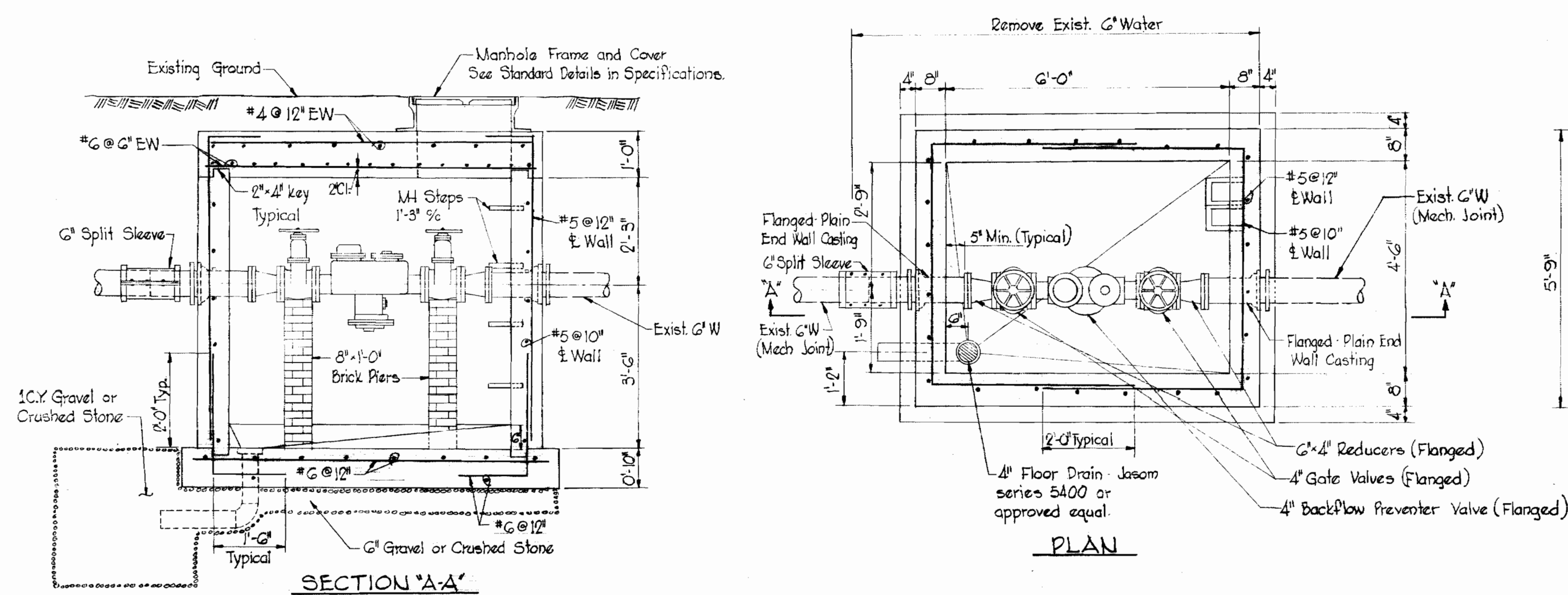
GENERAL NOTES FOR ALL MECHANICAL WORK

1. For work at Sewage Treatment Units Nos. 1 & 2, see drawing No. 22 and sewage treatment equipment manufacturer's drawings. (See Specifications.)
2. See structural drawings for exact location of lifting hooks, access hatch openings, and duct openings thru walls & floors.
3. All items of equipment noted as 'Relocate' are existing items located in the existing blower building on site (New Laboratory Building). The contractor shall remove, transport & reinstall where shown all such equipment providing new piping, valves and other appurtenances where required as shown on the drawings.
4. See Architectural drawings for location and installation of all louvers in walls.



To U.S. Pt #1 To Pumping Sta.

Note:
For General Notes on concrete and Steel See Drawing No. 11



DETAIL - BACKFLOW PREVENTER VALVE VAULT
SCALE: 1/2" = 1'-0"



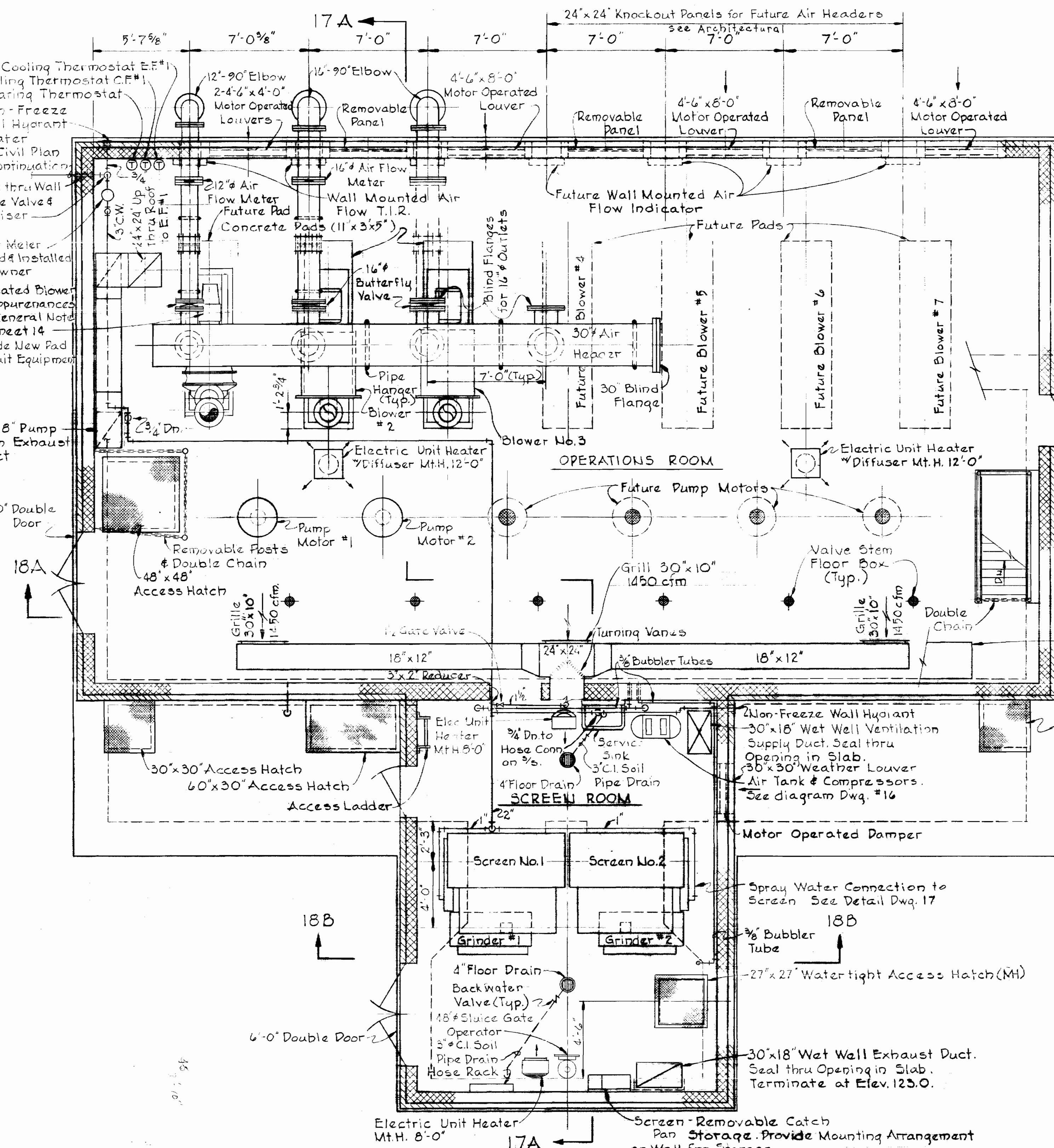
Kenneth A. McCord

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS DATE 4-11-69 <i>W. O. Falkenberg</i> CHIEF ENGINEER	CONTRACT NO. 237-S	MECHANICAL SYSTEM CURVE & DETAILS	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1	DRAWING NO. 14	SCALE AS SHOWN
					OF 33	AS BUILT 5/2/72

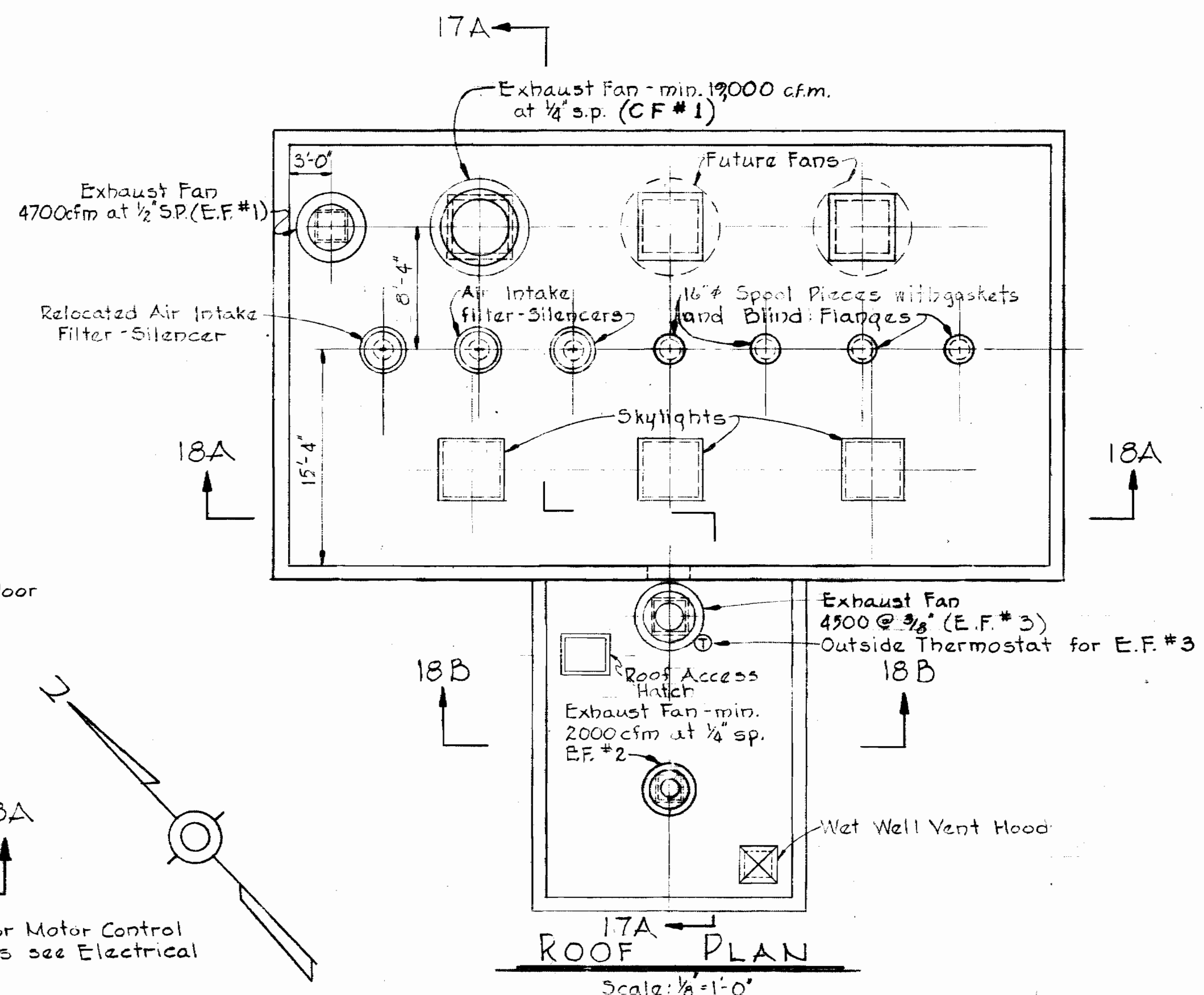
NS 237-S/14

SUSPENSE

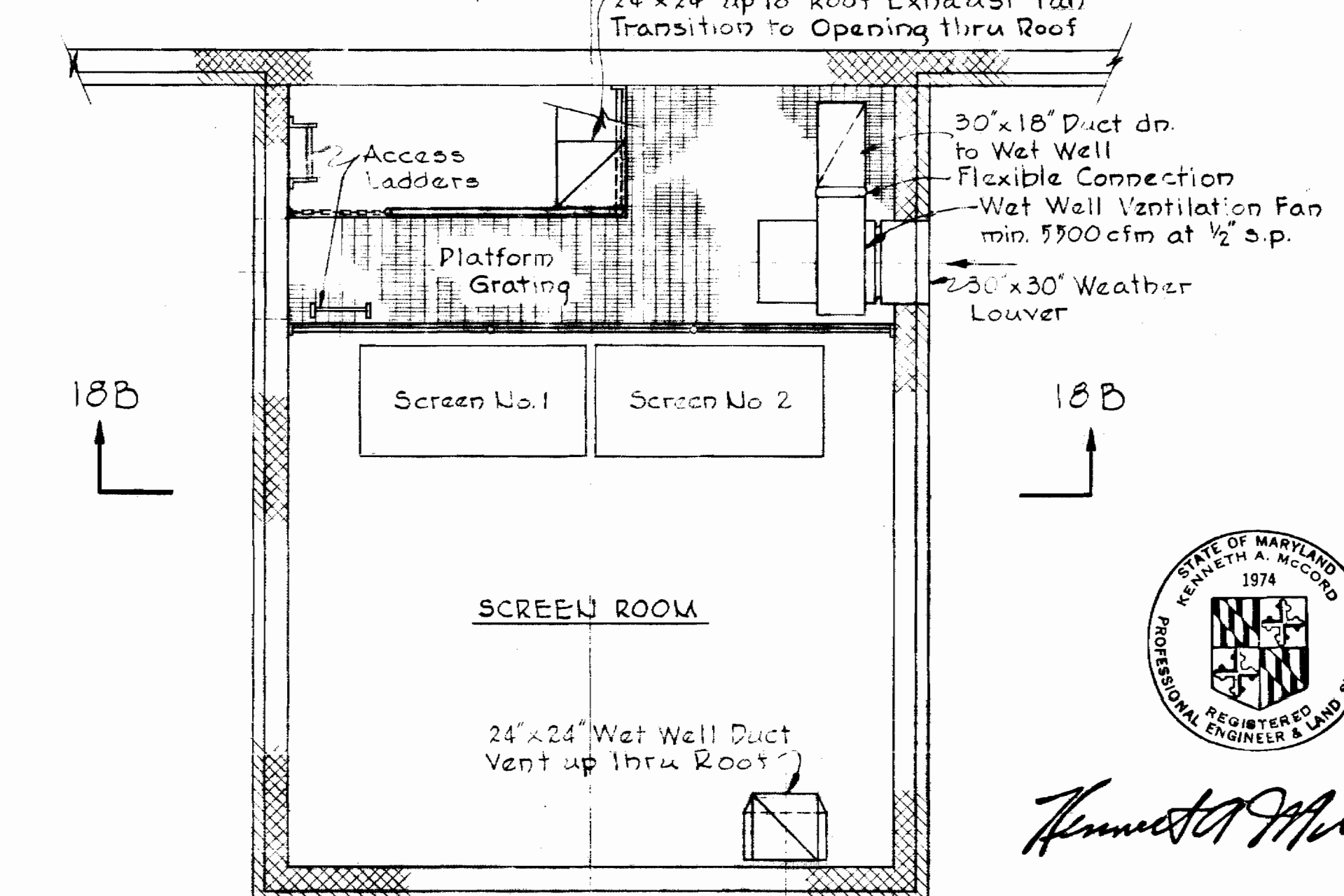
SUSPENSE



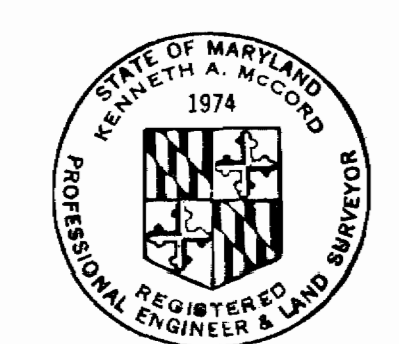
PLAN - BLOWER BUILDING & PUMPING STATION - ELEV. 156.5
Scale: 1/4" = 1'-0"



ROOF PLAN
Scale: 1/8" = 1'-0"



PART PLAN OF SCREEN ROOM AT ELEV. 154.0
Scale: 1/4" = 1'-0"



Kenneth A. McCord

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
4-11-69 *W.O. Falbert*
DATE CHIEF ENGINEER

CONTRACT NO. 237-S

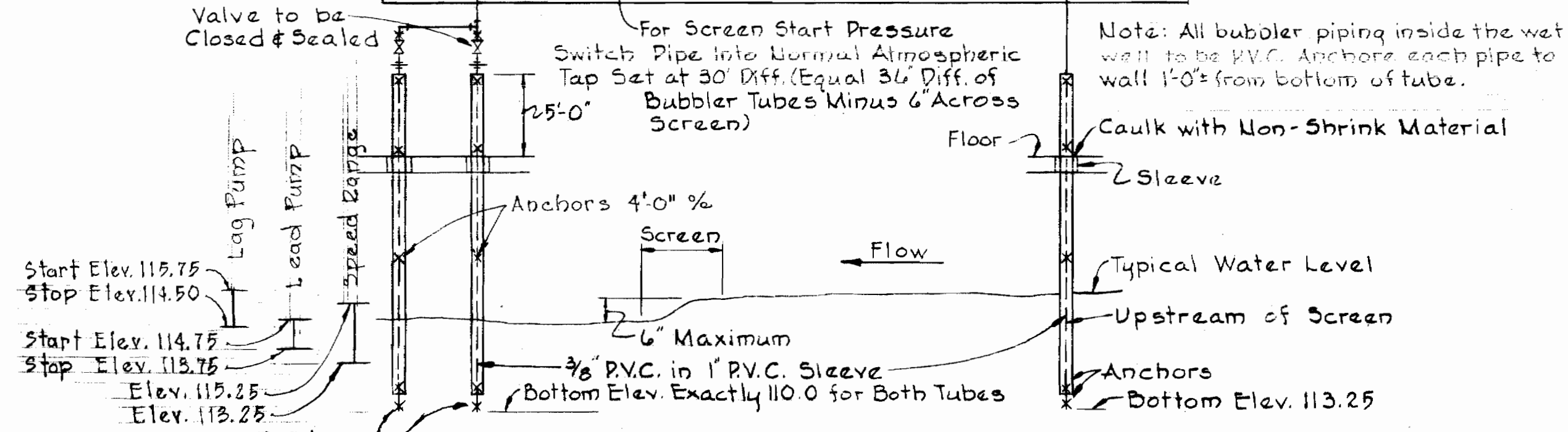
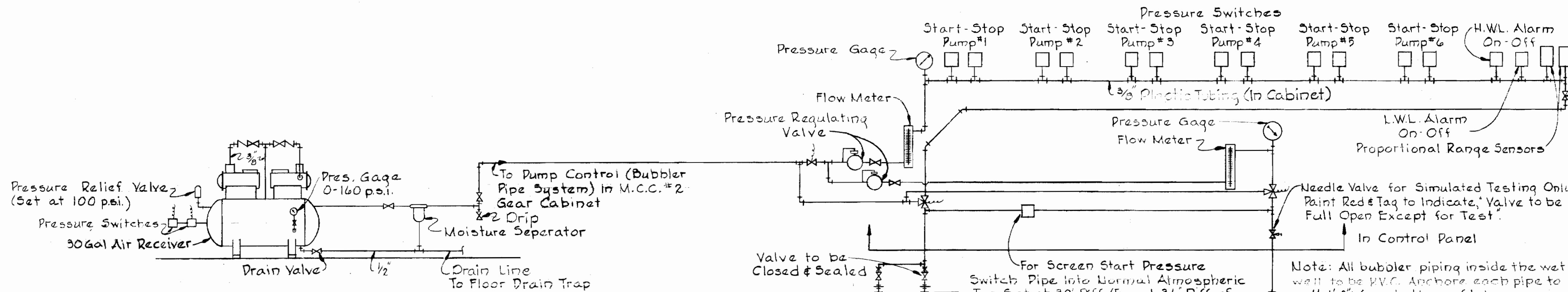
MECHANICAL PLANS
BLOWER BUILDING &
PUMPING STATION

SAVAGE SEWAGE
TREATMENT PLANT ADDITION NO. 1

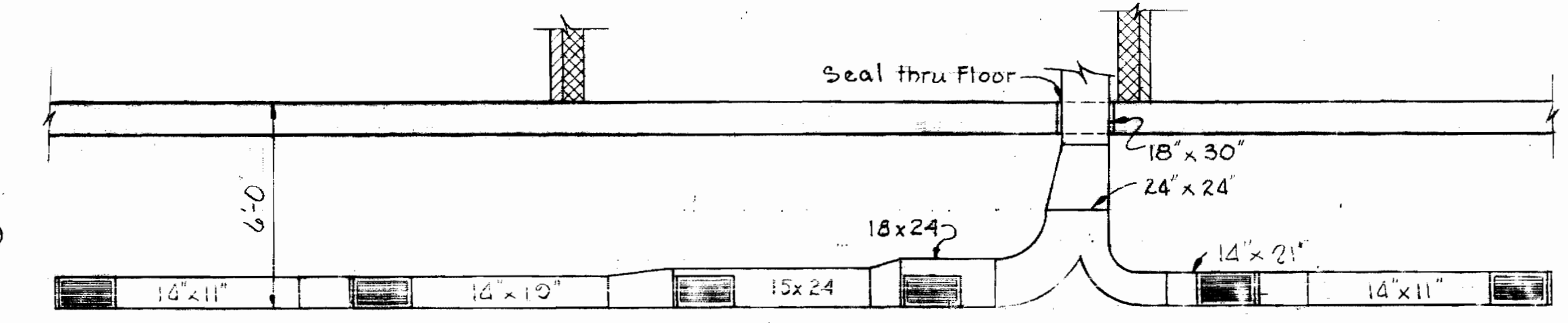
DRAWING NO. 15 OF 33

SCALE AS SHOWN

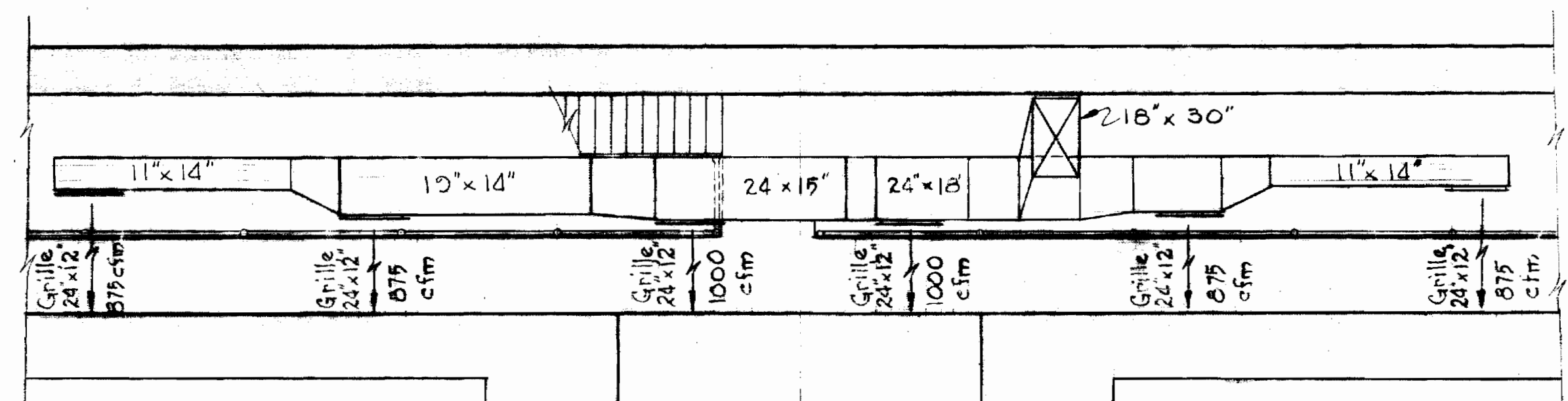
VS 237-S/15



AIR SYSTEM - CONTROL AND SUPPLY DIAGRAM
Scale: None



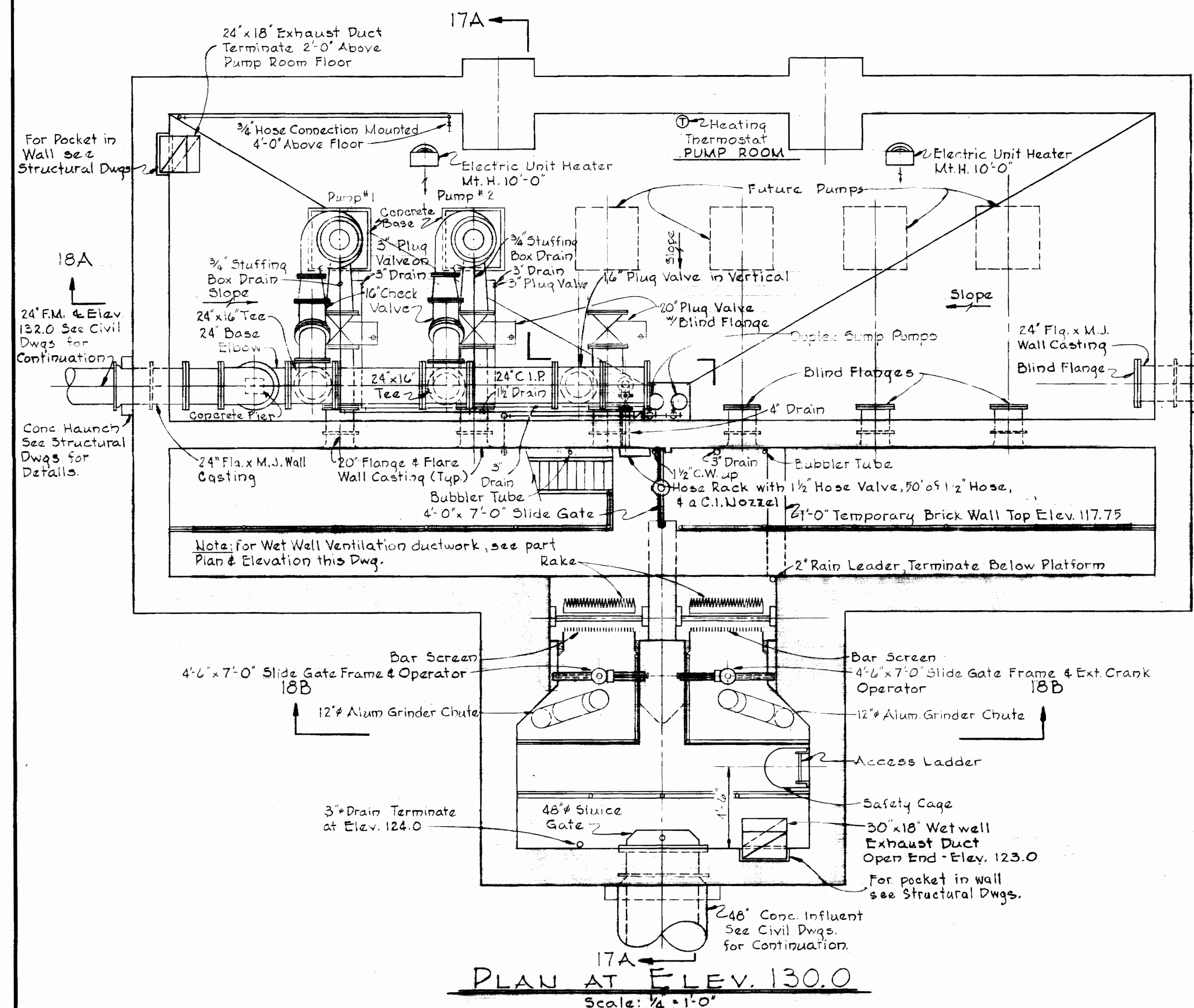
ELEVATION - WET WELL DUCT
Scale: 1/4" = 1'-0"



PART PLAN OF WET WELL DUCT
Scale: 1/4" = 1'-0"



Kenneth A. McLeod



PLAN AT ELEV. 130.0
Scale: 1/4" = 1'-0"

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
4-11-69 *W.O. Railroad*
DATE CHIEF ENGINEER

CONTRACT NO. 237-S

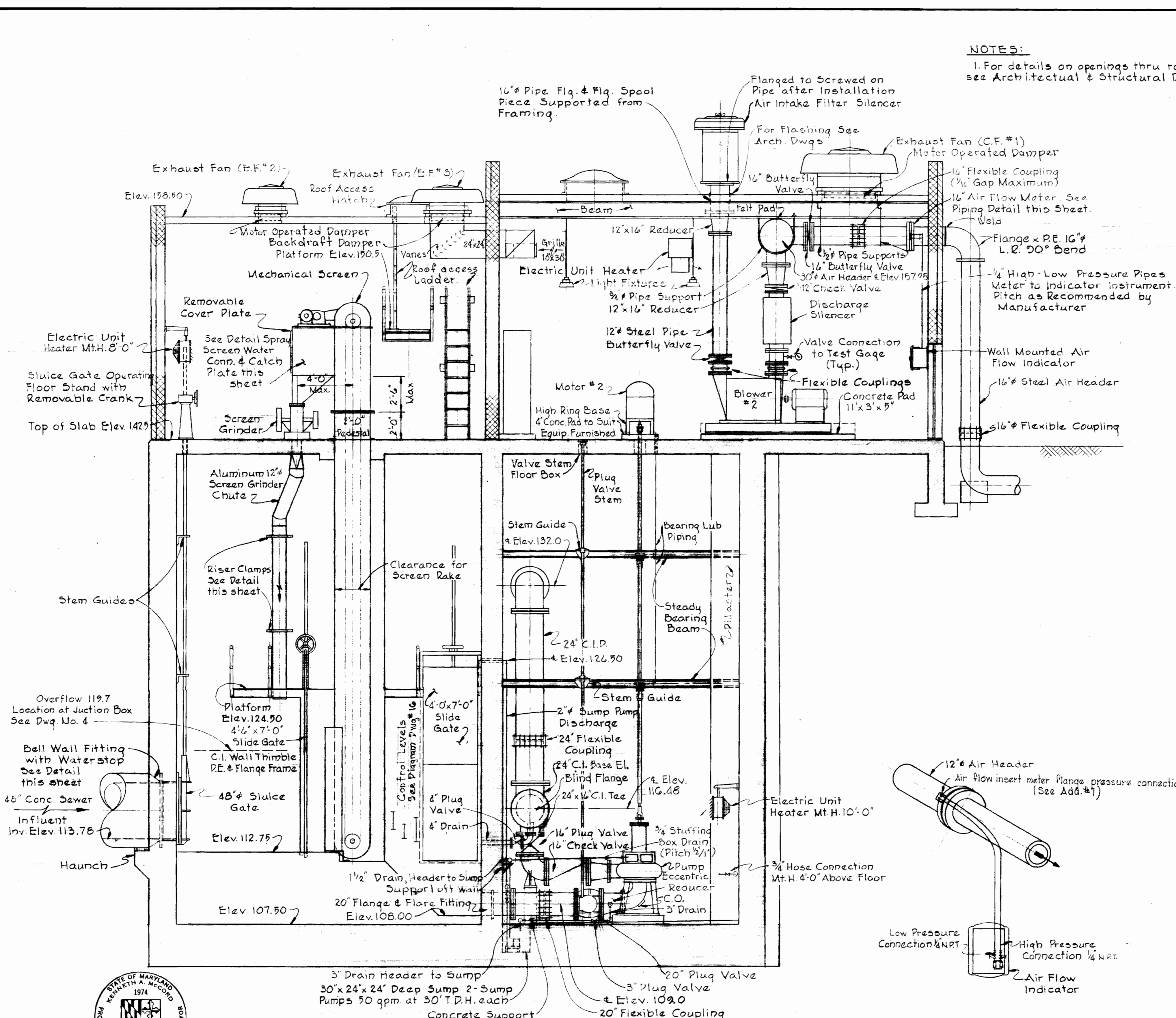
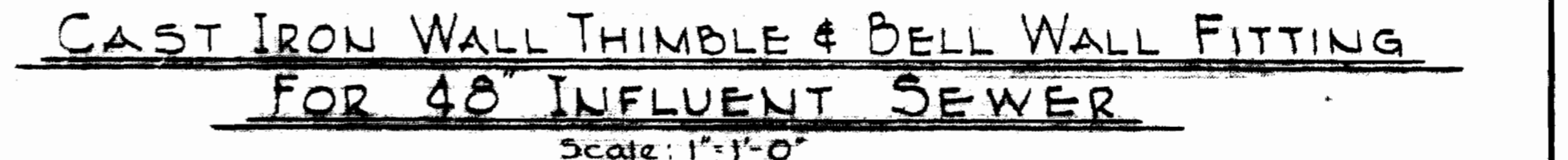
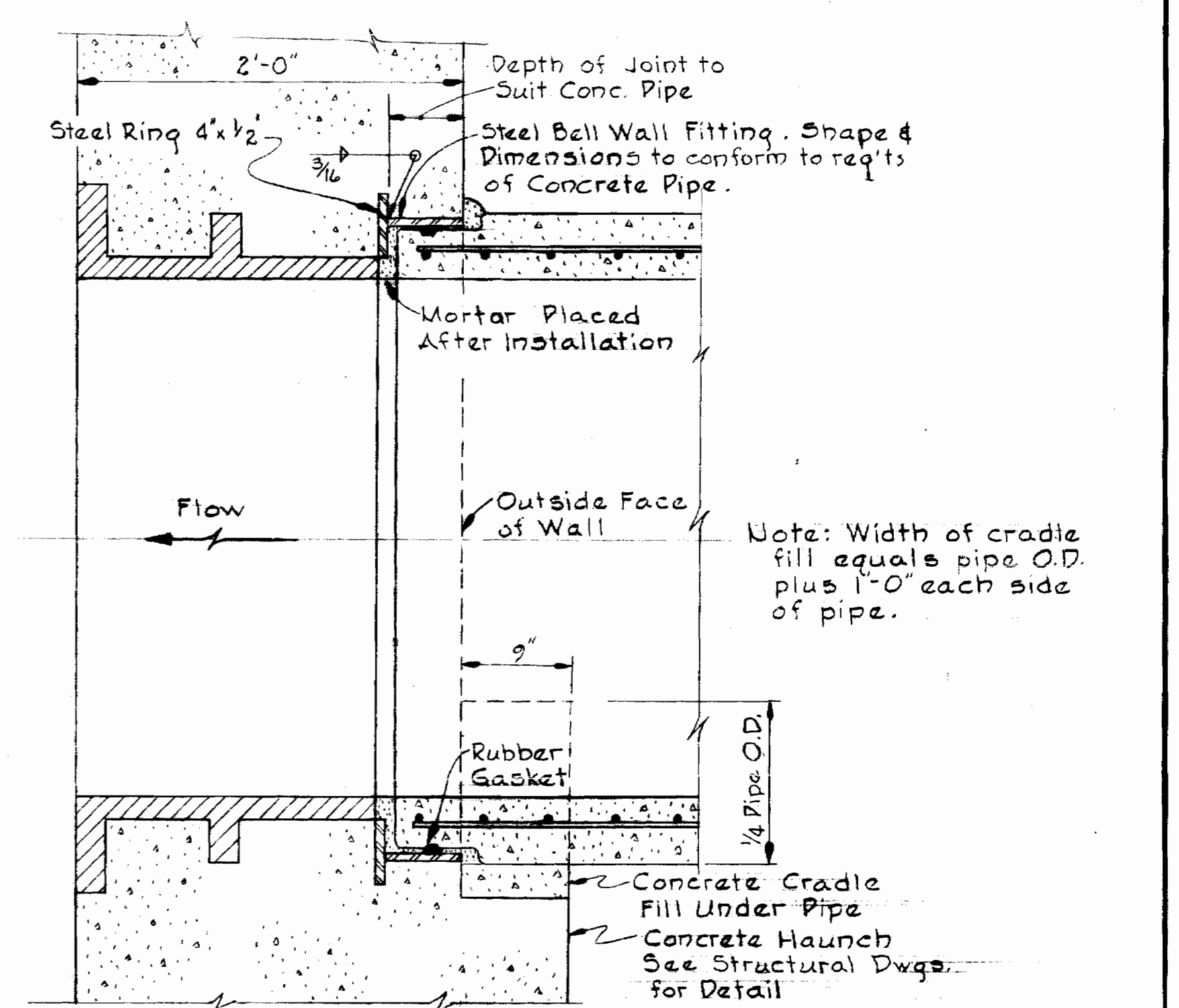
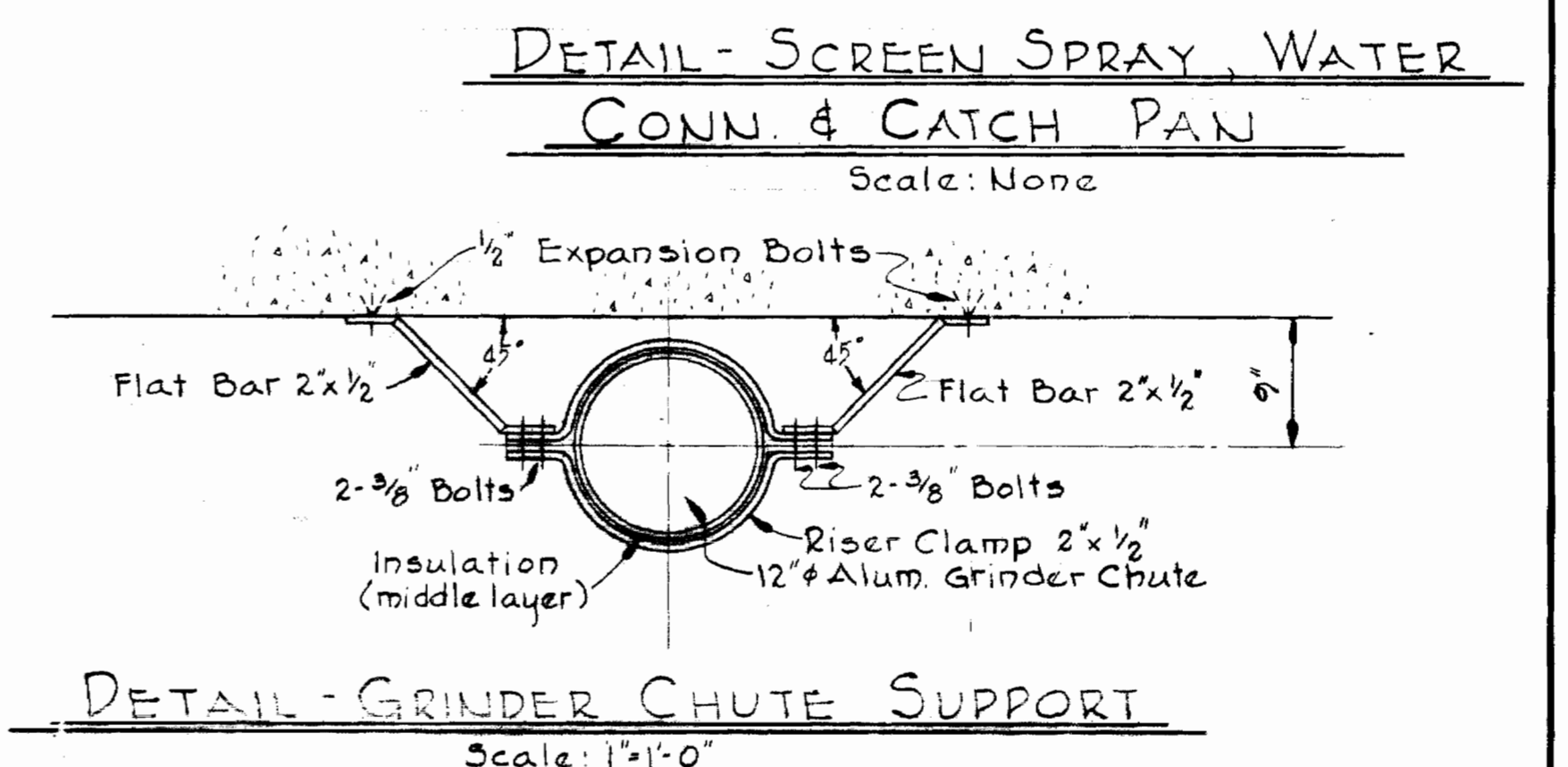
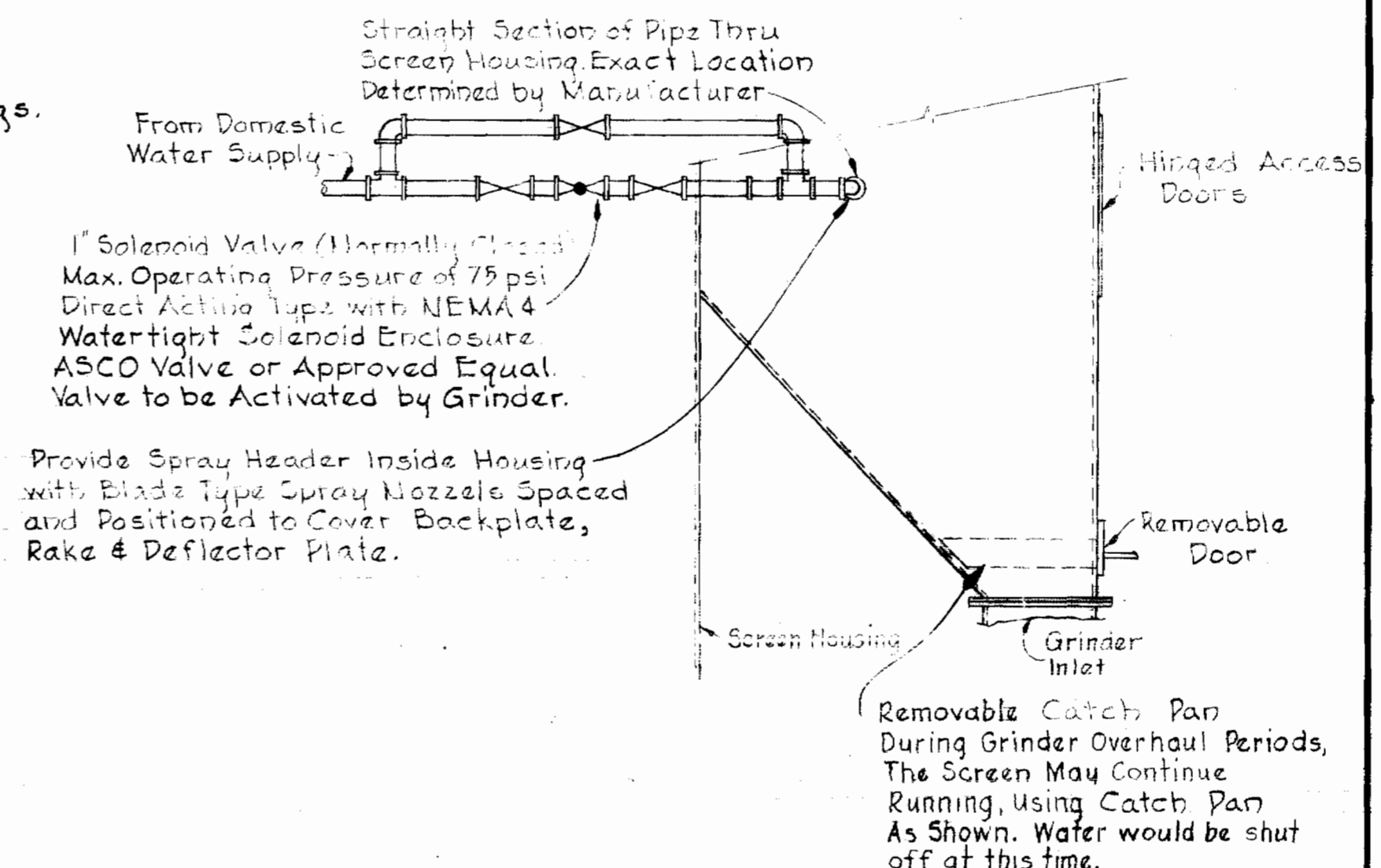
MECHANICAL PLAN & DETAILS
BLOWER BUILDING & PUMPING STATION

SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1

DRAWING NO. 16 OF 33 SCALE AS SHOWN

AS BUILT 3/5/72

NOTES:
 1. For details on openings thru roof see Architectural & Structural Dwg's.



Kenneth A. McLeod

WHITMAN, REQUARDT & ASSOCIATES
 ENGINEERS
 1304 ST. PAUL ST.
 BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
 4-11-69
W. O. Fickett
 CHIEF ENGINEER

CONTRACT NO. 237-S
MECHANICAL SECTION & DETAILS
BLOWER BUILDING
& PUMPING STATION

SAVAGE SEWAGE
TREATMENT PLANT ADDITION NO. 1

DRAWING NO. 17	SCALE AS SHOWN
OF 33	

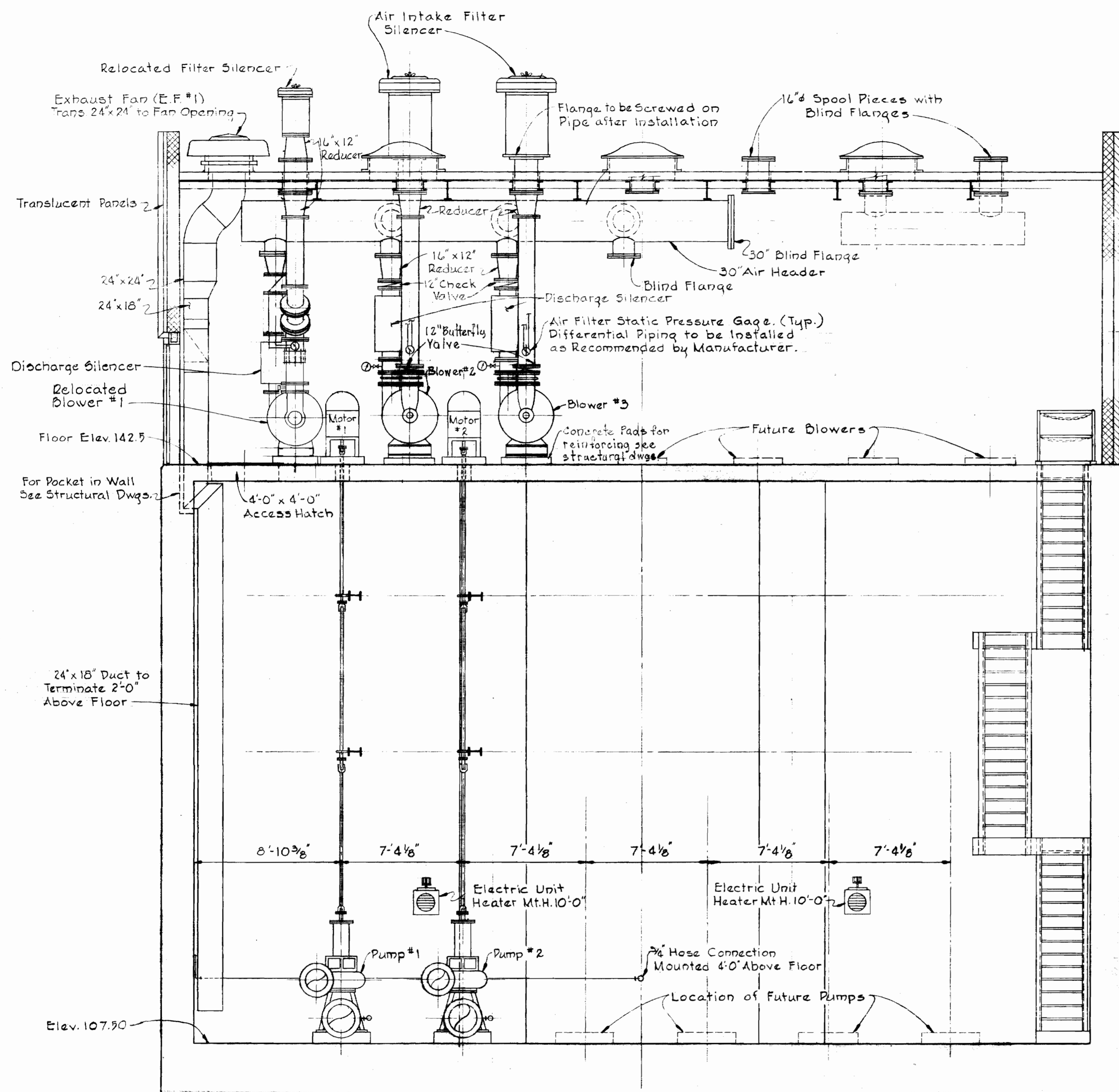
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AS BUILT 3/5/72

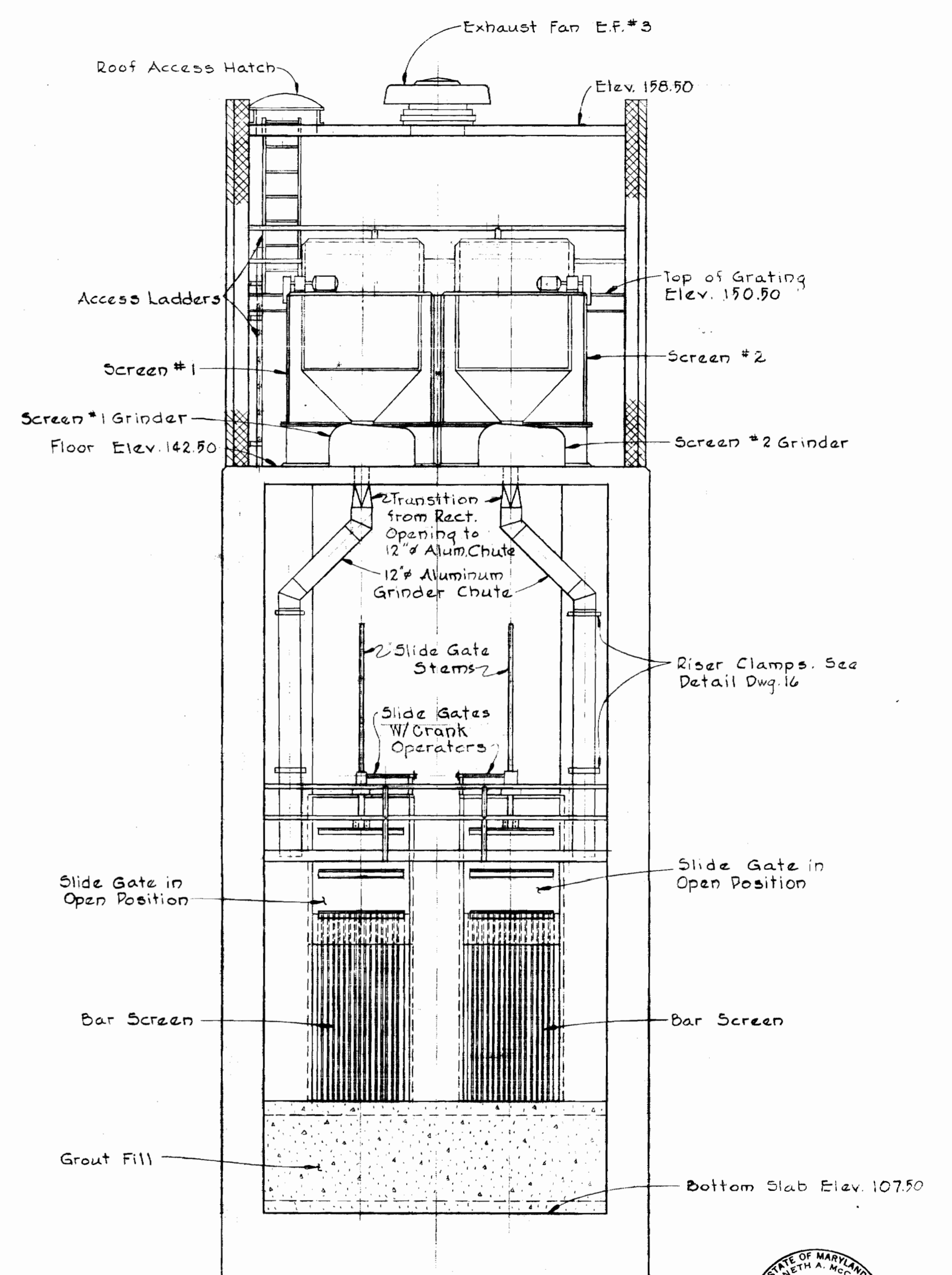
WS 237-S/17

Suspension

Suspension



SECTION 18A
Scale: 1/4" = 1'-0"



SECTION 18B
Scale: 1/4" = 1'-0"



Kenneth A. Accord

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
4-11-69
DATE
W. O. Filbert
CHIEF ENGINEER

CONTRACT NO. 237-S

MECHANICAL SECTIONS
BLOWER BUILDING &
PUMPING STATION

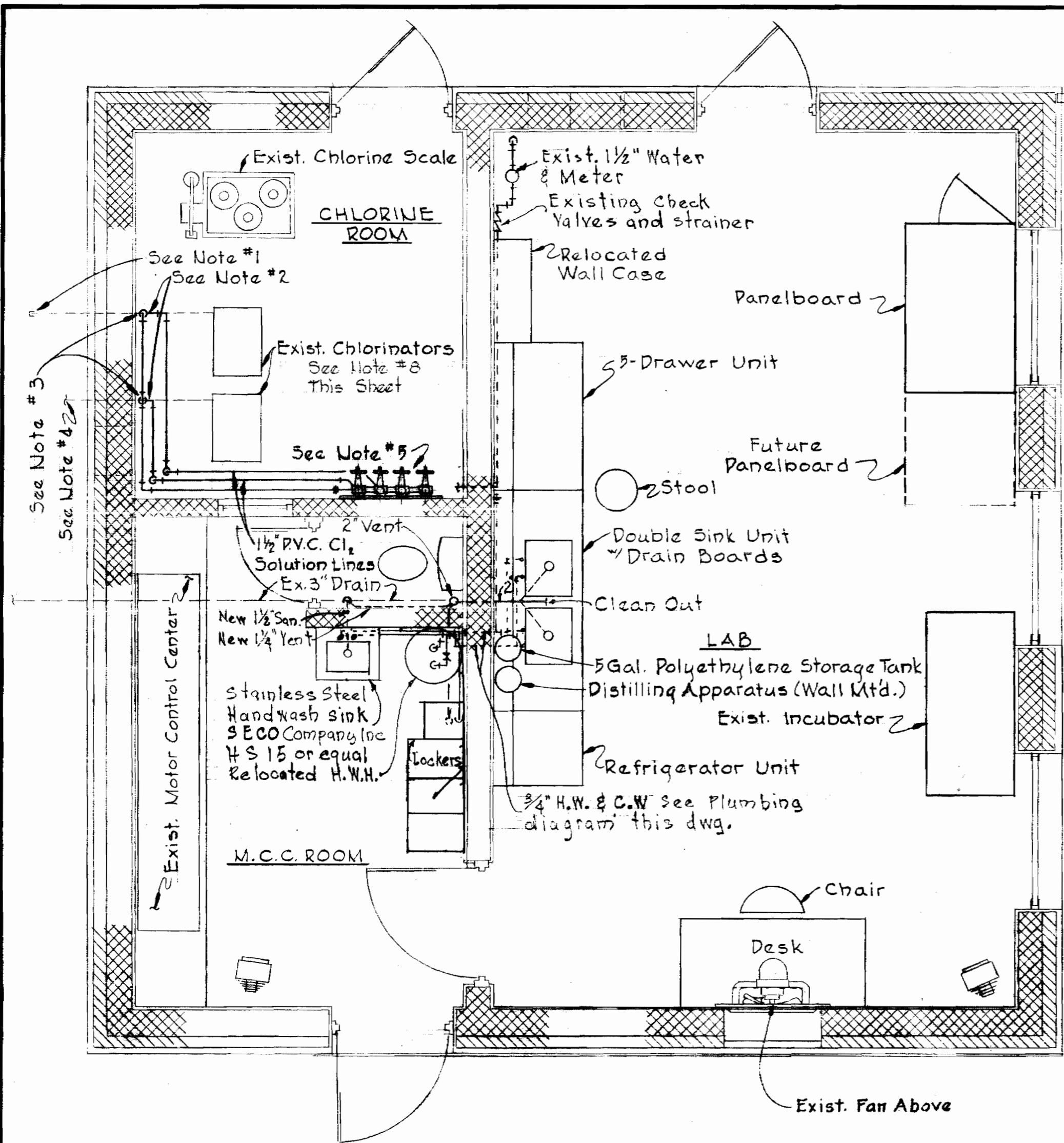
SAVAGE SEWAGE
TREATMENT PLANT ADDITION NO. 1

DRAWING NO. 18 OF 33
SCALE AS SHOWN

W.O. 6050

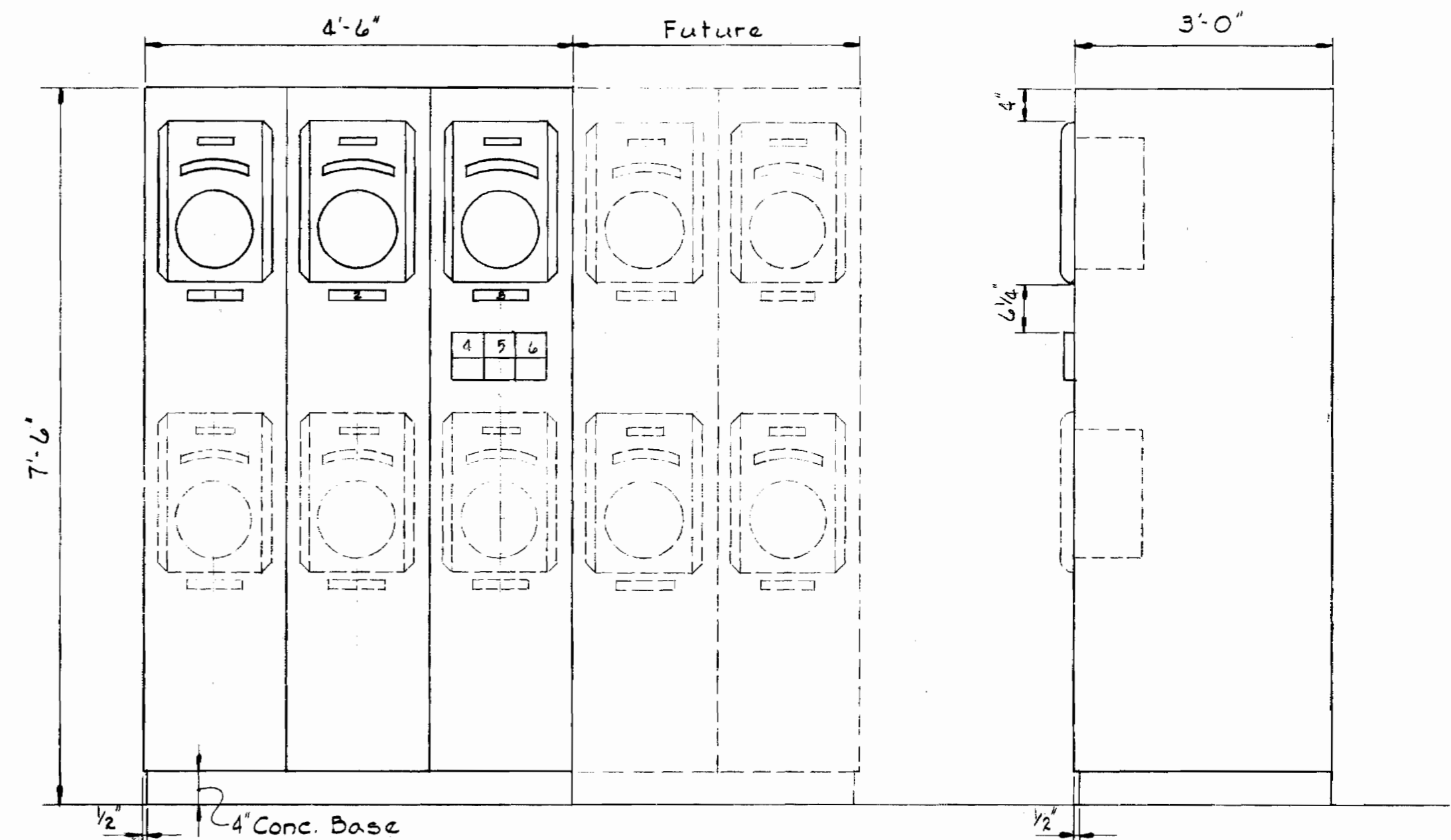
AS BUILT 3/3/72

237-S/18

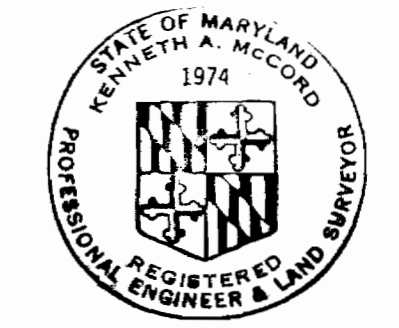
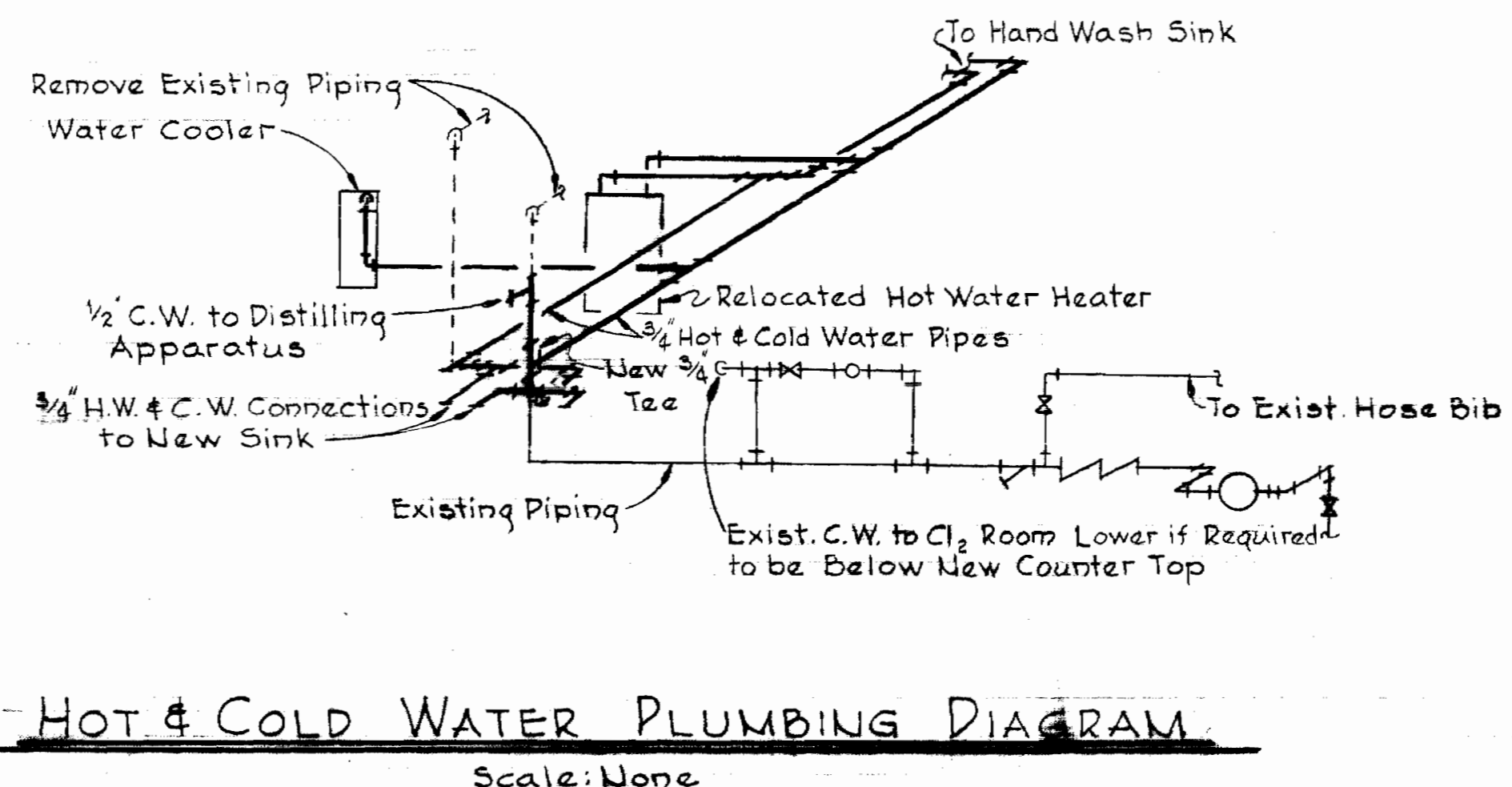
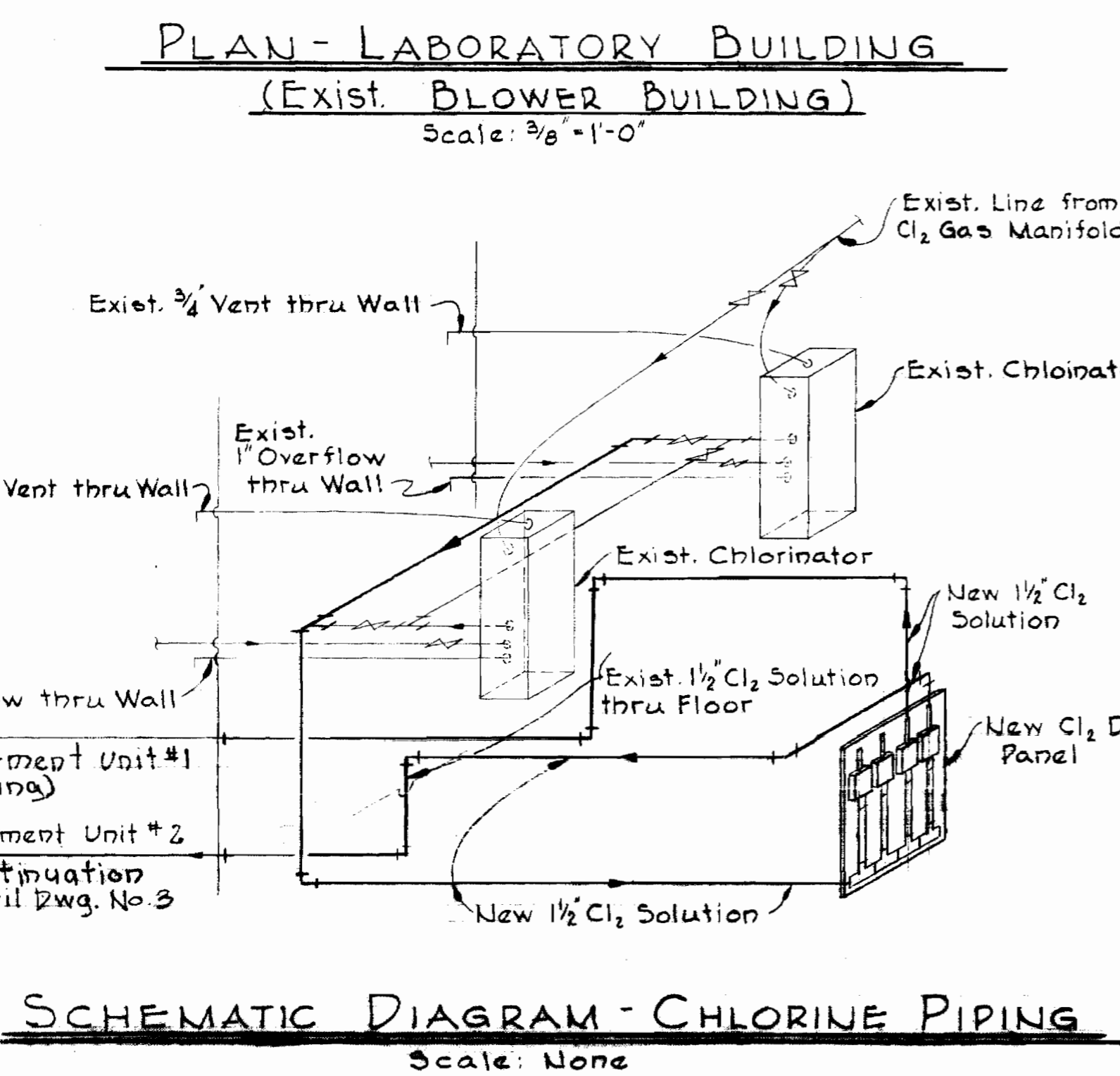


- CHLORINE PIPING NOTES:**
1. Remove cap & continue 2" PVC solution line to Treatment Unit #2 as shown on Dwg. #3.
 2. Connect new 1 1/2" PVC solution lines from dist. panel to exist pipes at floor.
 3. Provide new 1 1/2" PVC elbows up & continue solution piping to distribution panel as shown.
 4. Existing 1 1/2" solution line to unit #1.
 5. Chlorine solution distribution panel Fisher-Porter 1 1/2" 71C614 .33" x 39"

- GENERAL NOTES:**
1. Remove exist blowers. Relocate 2000 cfm unit, piping & accessories. Relocate to new P.S. and Blower Bldg. Turn over to the owner the 1000 cfm unit, all accessories, and piping including 2" header piping to limit underground shown on civil dwgs.
 2. Seal holes thru wall and roof.
 3. Remove and turn over to the owner existing lab furniture located in M.C.C. Room.
 4. Provide & set new equipment & furniture.
 5. Relocate H.W. Heater from wall to floor.
 6. Provide plumbing, hot & cold water & sanitary to new handwash sink, water fountain, lab sink unit and Distilling Apparatus; and to relocated hot water heater.
 7. Remove concrete pads in Blower Room & furnish and lay vinyl asbestos tile as follows:
 - a. Vinyl asbestos tile shall be 1/8" gauge, 9" x 9" Excelon tile as manufactured by the Armstrong Cork Company, or approved equal.
 - b. Vinyl cover base shall be top set type, 4" high, 1/2" thick of color selected by the Engineer.
 - c. Adhesive fill shall be Armstrong Cork Co's S-100 latex fill, not to exceed 1/4" depth upon one application. Number of applications will depend upon fill required by removal of concrete pads and evenness of floor for application of tile.
 8. Existing Chlorinators - Provide new rotometers, rate valves, ejector parts & labor required to increase chlorinator output over a new range of 35 to 100 pounds per day. (See Add. 1)



- PANELBOARD LEGEND**
1. Sewage Effluent Flow - Treatment Unit No.1
 2. Sewage Effluent Flow - Treatment Unit No.2
 3. Sewage Effluent Total Flow
 4. Collector Drive Trouble
 5. Blower Surge
 6. Wet Well Level & Control Air



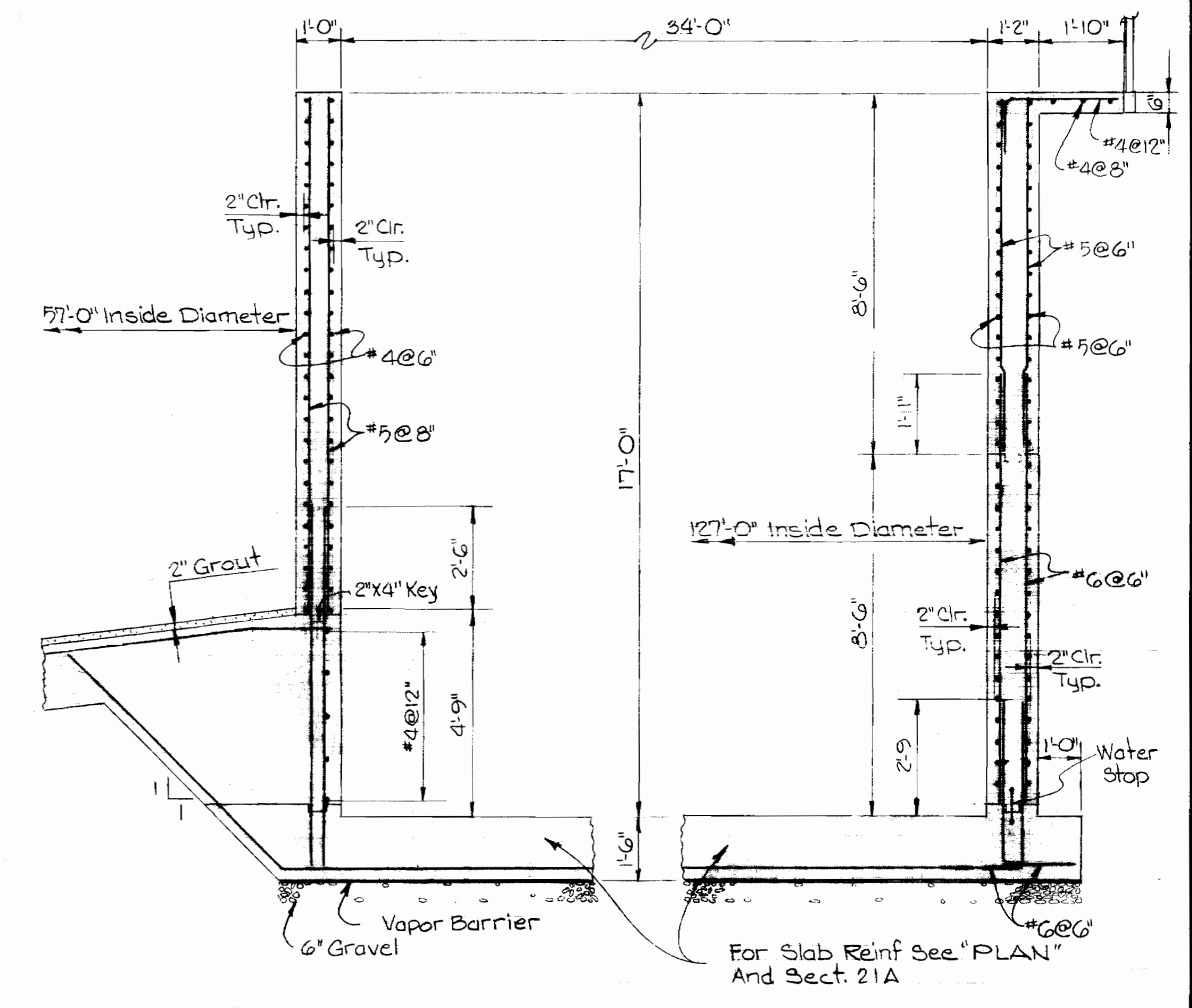
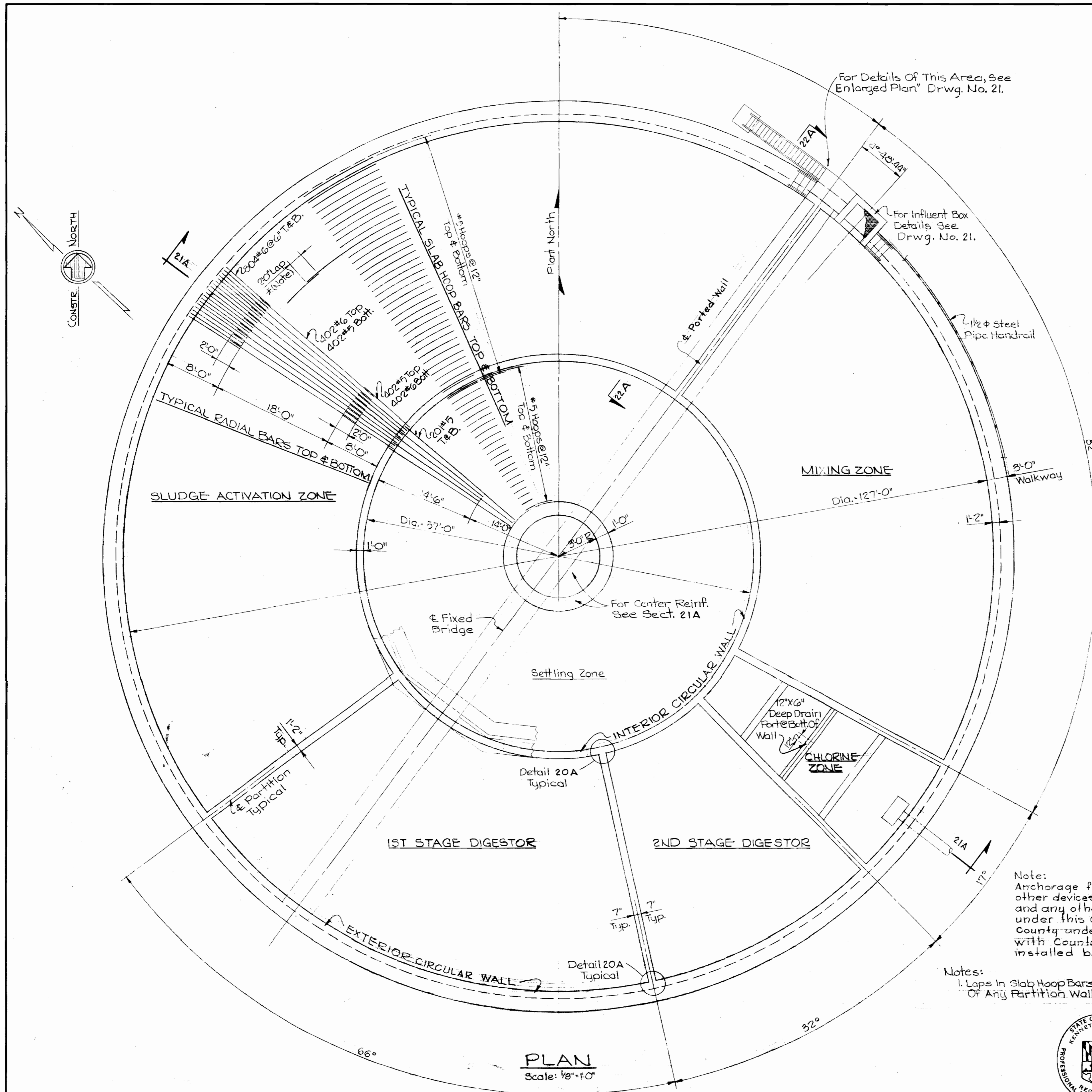
Kenneth A. McLeod

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS 4-11-69 W. O. Fallick CHIEF ENGINEER	CONTRACT NO. 237-S	MECHANICAL PLAN & DETAILS EXISTING BLOWER- NEW LAB BUILDING	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1	DRAWING NO. 19 OF 33	SCALE AS SHOWN
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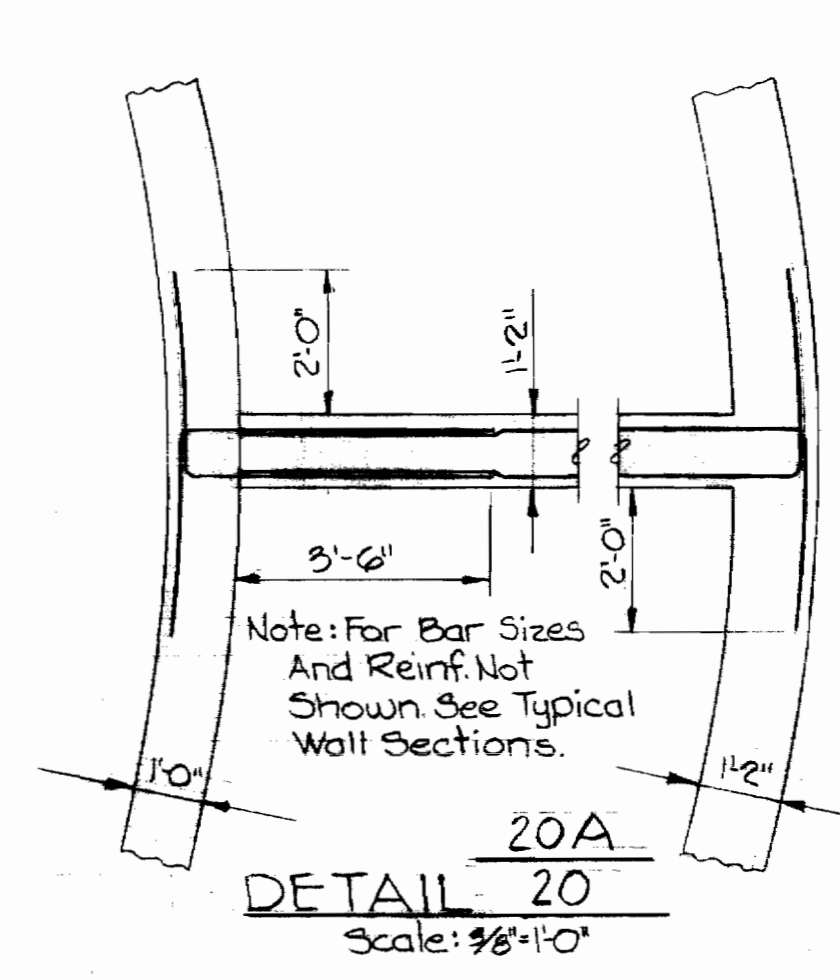
W.O. 6050

AS BUILT 3/3/72

NS 237-S/19

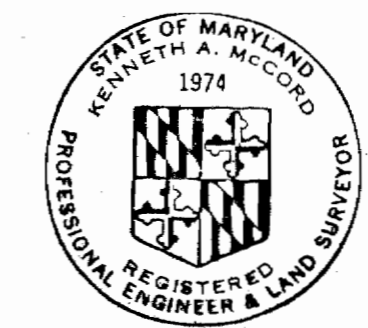
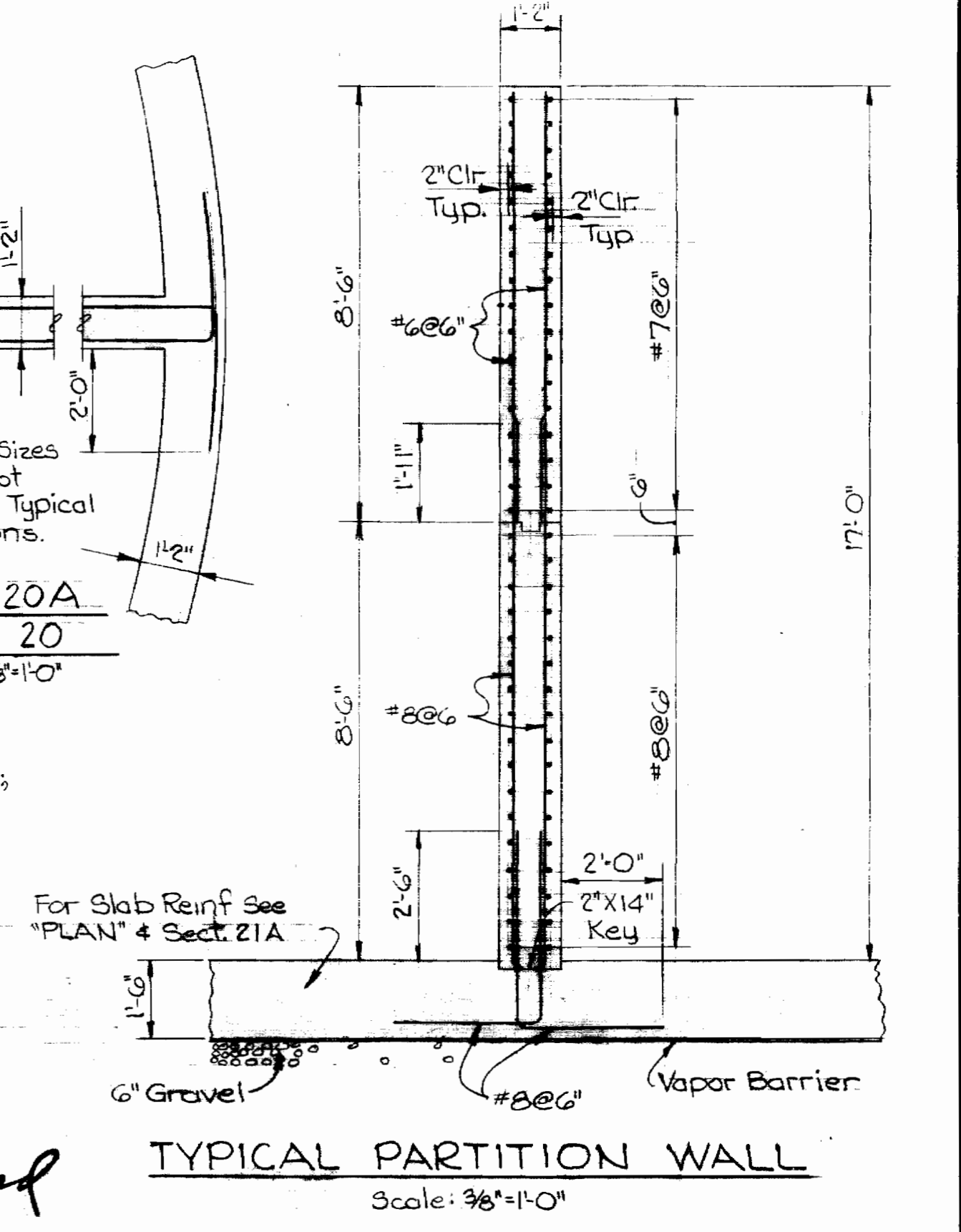


TYPICAL EXTERIOR CIRCULAR WALL
Scale: 3/8"=1'-0"



Note:
Anchorage for all brackets, bearing plates, and other devices; all wall castings and pipe sleeves; and any other embedded items furnished under this contract or furnished by the County under this contract in accordance with County furnished drawings shall be installed by the contractor.

Notes:
1. Laps in Slab Hoop Bars shall Not Occur Within 5'-0" Of Any Partition Wall.

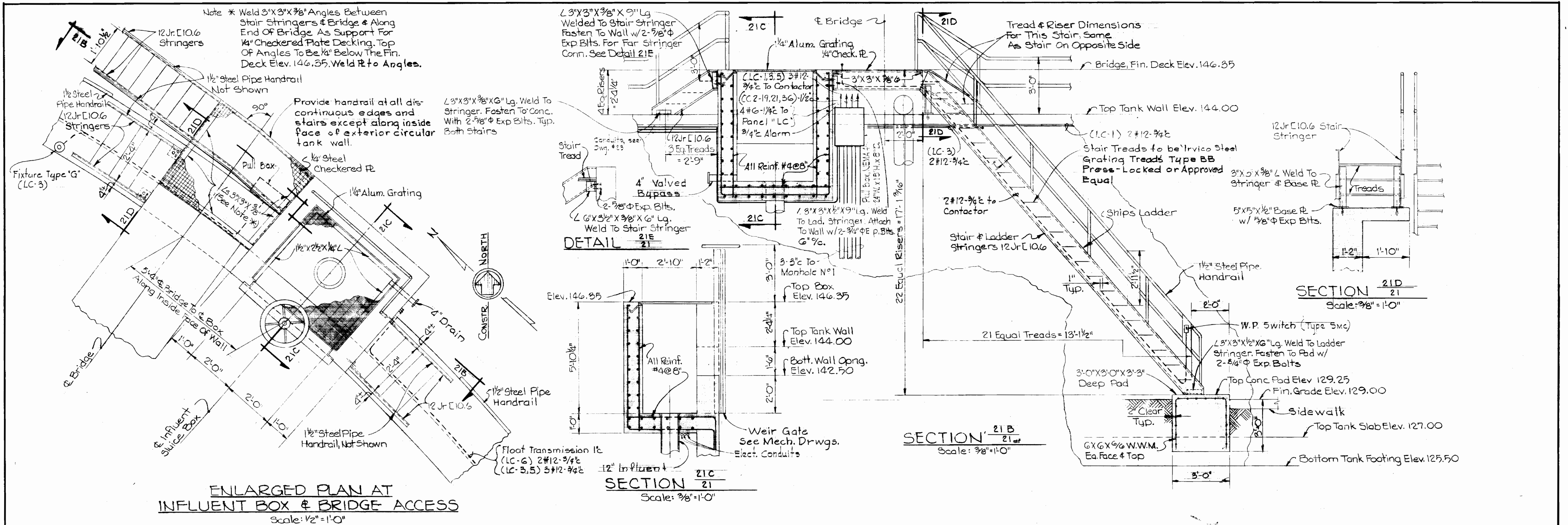


Kenneth A. McCord

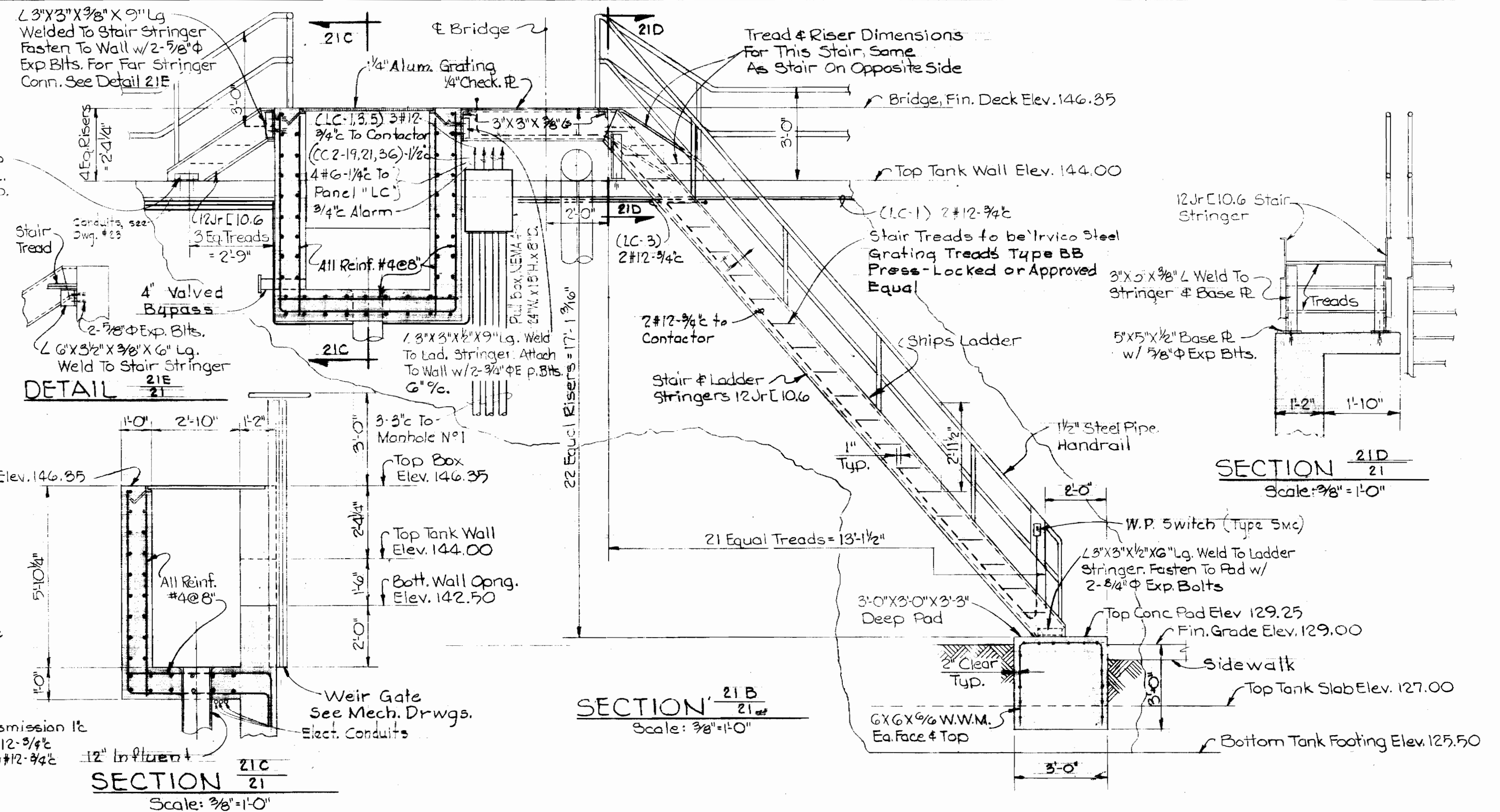
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS 4-11-69 <i>W.O. Roberts</i> CHIEF ENGINEER	CONTRACT NO. 237-S	STRUCTURAL PLAN TREATMENT UNIT NO. 2	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1	DRAWING NO. 20 OF 33 SCALE AS SHOWN
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SUSPENSE

SUSPENSE



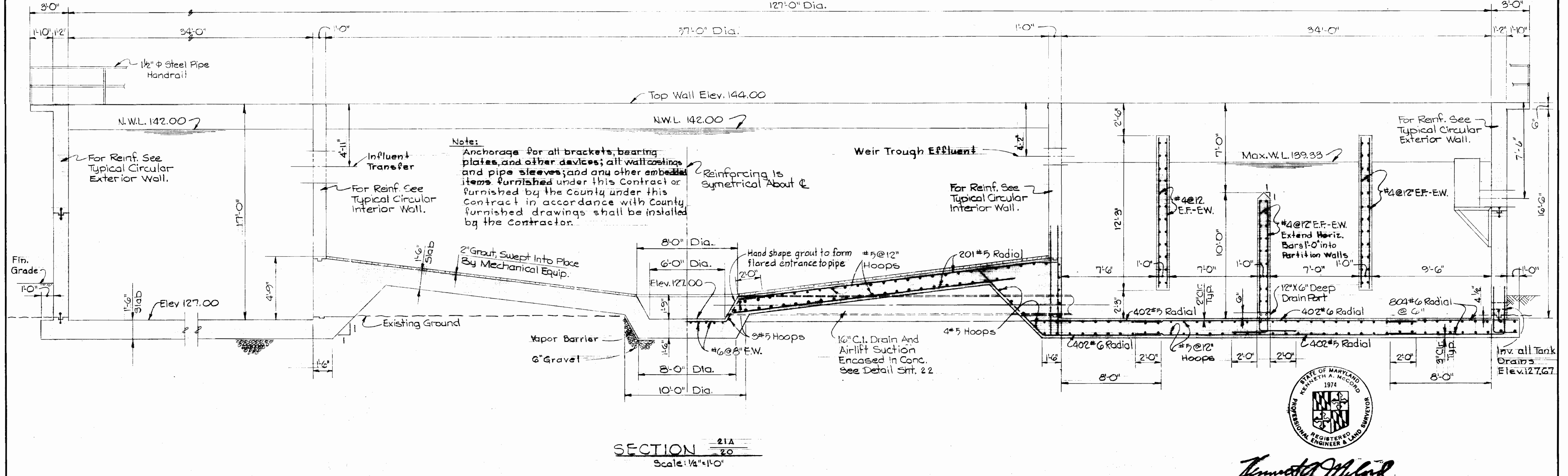
ENLARGED PLAN AT INFLUENT BOX & BRIDGE ACCESS
Scale: 1/2" = 1'-0"



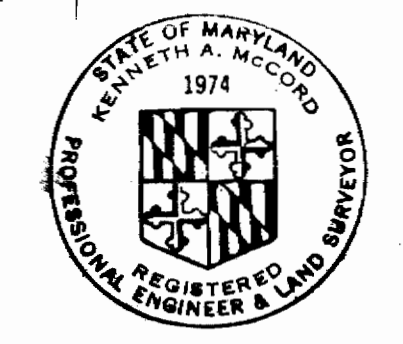
SECTION 21A
Scale: 3/8" = 1'-0"

SECTION 21B
Scale: 3/8" = 1'-0"

SECTION 21D
Scale: 3/8" = 1'-0"



SECTION 21A
Scale: 1/4" = 1'-0"

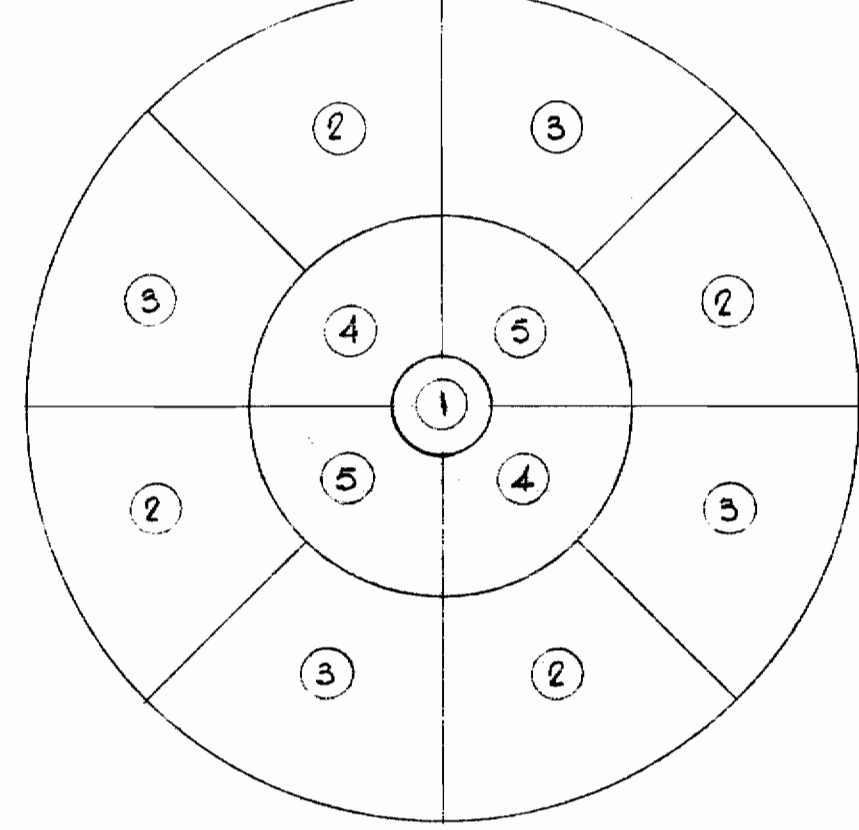


Kenneth A. McCord

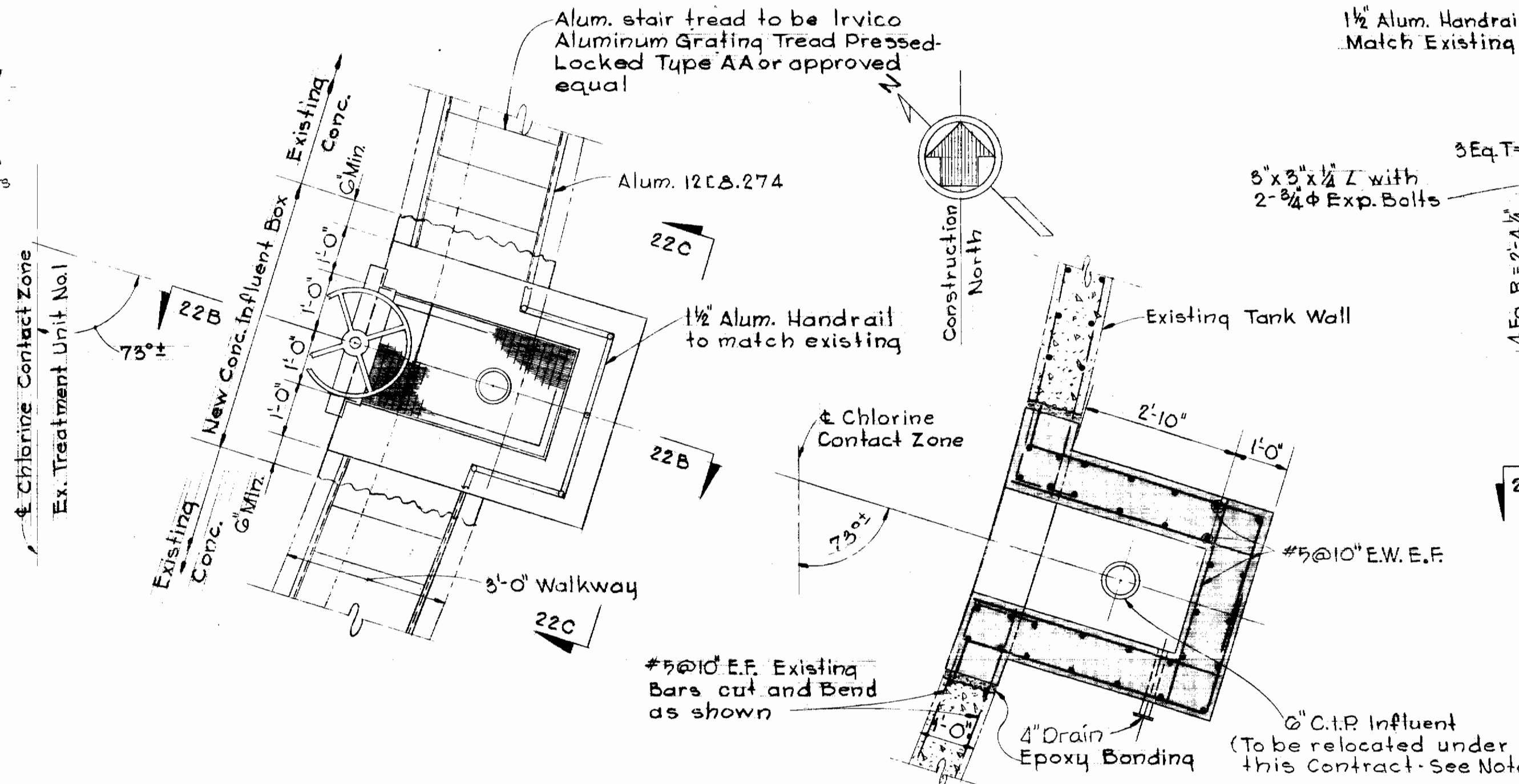
WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS 4-11-69 DATE <i>W.O. Gilbert</i> CHIEF ENGINEER	CONTRACT NO. 237-S	STRUCTURAL SECTIONS TREATMENT UNIT NO. 2	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1	DRAWING NO. 21 OF 33 SCALE AS SHOWN AS BUILT 3/2/72
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WS 237-S/22

Note:
Reinforcing bars shall be continuous through construction joints. Three days min. shall elapse between adjacent pours. Vertical joints in walls shall be located above slab joints or as directed by the Engineer and shall contain waterstops to within 6" inches of the top of the tank wall. Numbers in circles indicate the sequence of pours. For typical construction joint see Drawing No. 13 (Add #4)



FOUNDATION SLAB
POURING SEQUENCE

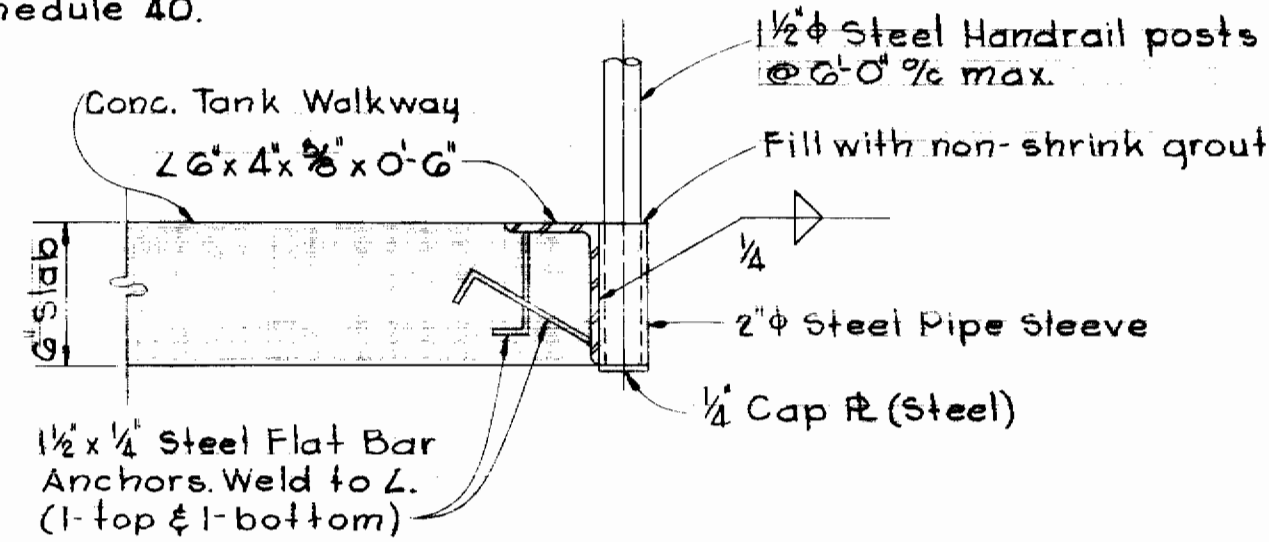


TOP PLAN

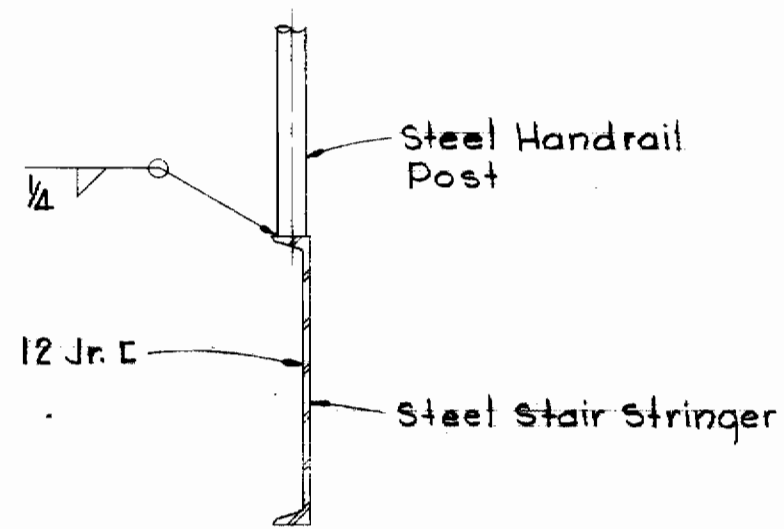
SECTION 22 D
SECTION 22
SECTION 22 B
CONTROL WEIR BOX - TREATMENT UNIT NO. 1
Scale: 1/2" = 1'-0"

Note:

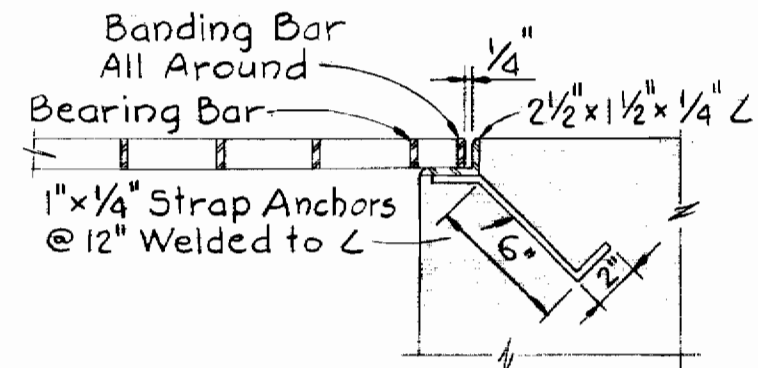
All steel pipe handrail & posts, and all steel sleeves for handrail shall be equivalent to schedule 40.



CONCRETE MOUNTING



STEEL MOUNTING



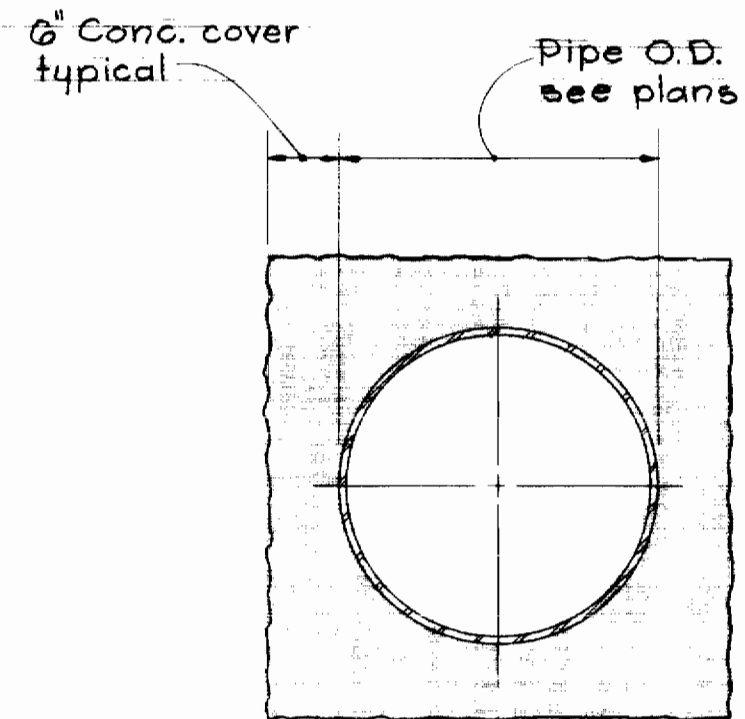
Grating Notes:
1. All Material to be Aluminum (6061-T6)
2. All Grating Sections shall be capable of supporting a live load of 150 p.s.f. and have Bearing Bars 1 1/4" deep (min).

GRATING DETAIL
Scale: 1 1/2" = 1'-0"

Note: 1

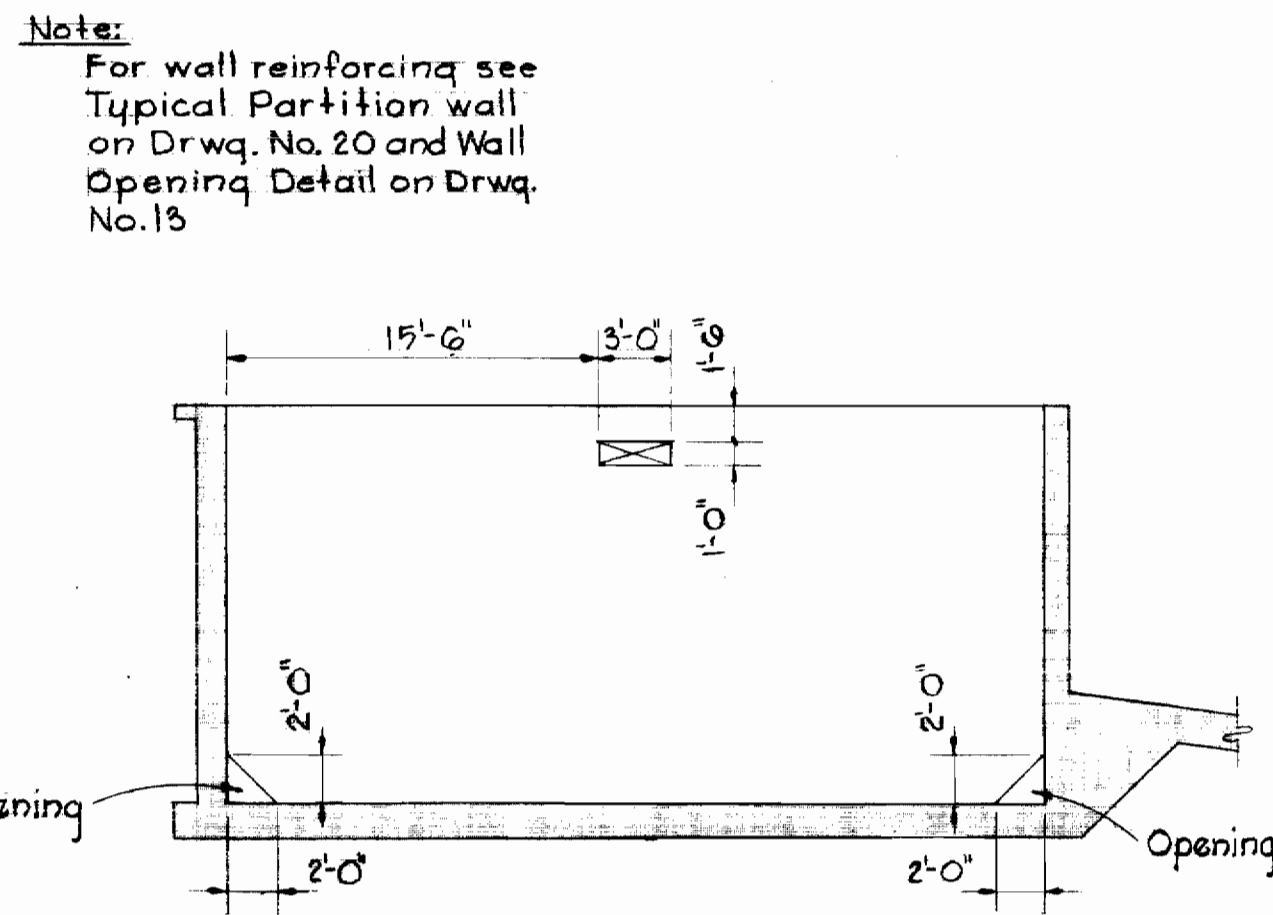
In addition to construction of Control Weir Box on Treatment Unit No. 1, the Contractor shall furnish all material to relocate existing influent piping presently entering thru the tank wall to enter thru the bottom of the Weir Box. The void left by the pipe removed, etc shall be plugged with epoxy bonding material.

STEEL HANDRAIL DETAIL
Scale: 1 1/2" = 1'-0"

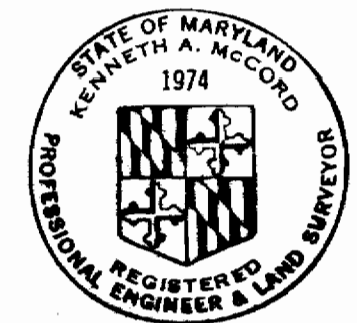


Note:
Where pipes are under structures extend encasement to underside of slab

TYPICAL PIPE
ENCASEMENT DETAIL
Not to Scale



SECTION 22 A
Scale: 1/8" = 1'-0"



Kenneth A. McCord

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
4-11-69
DATE
W. O. Whitman
CHIEF ENGINEER

CONTRACT NO. 237-S

STRUCTURAL DETAILS
TREATMENT UNIT NO. 2

SAVAGE SEWAGE
TREATMENT PLANT ADDITION NO. 1

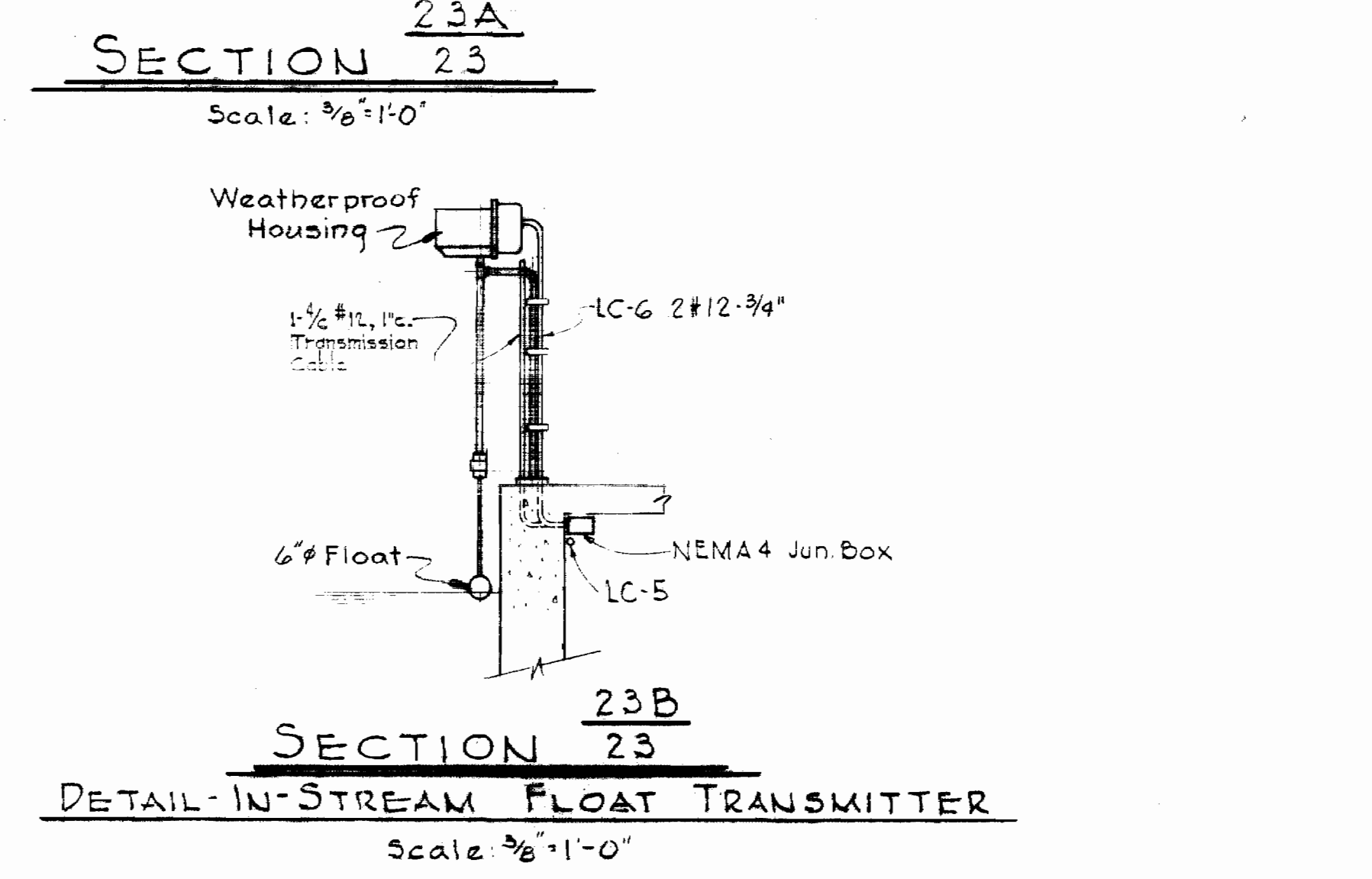
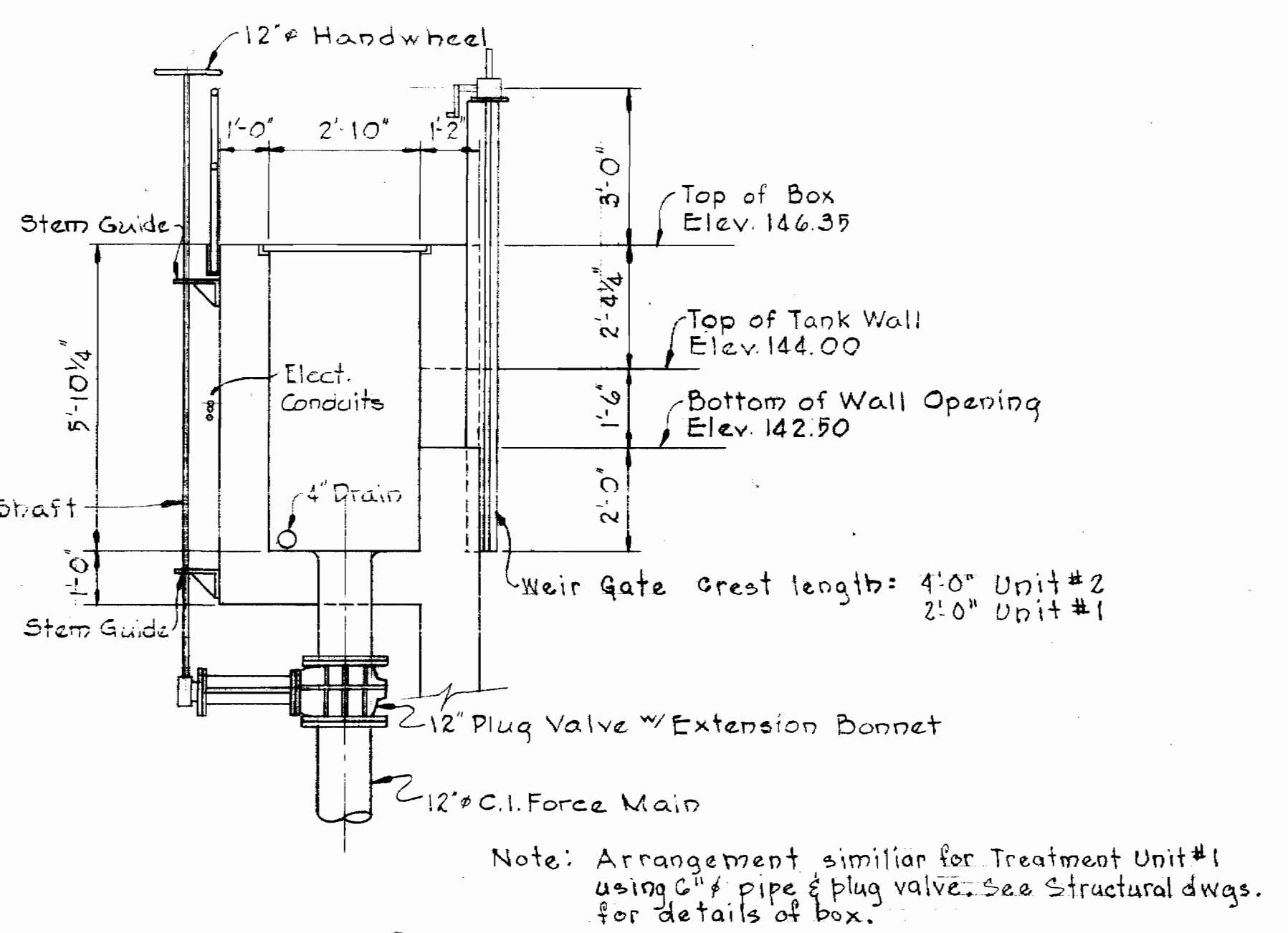
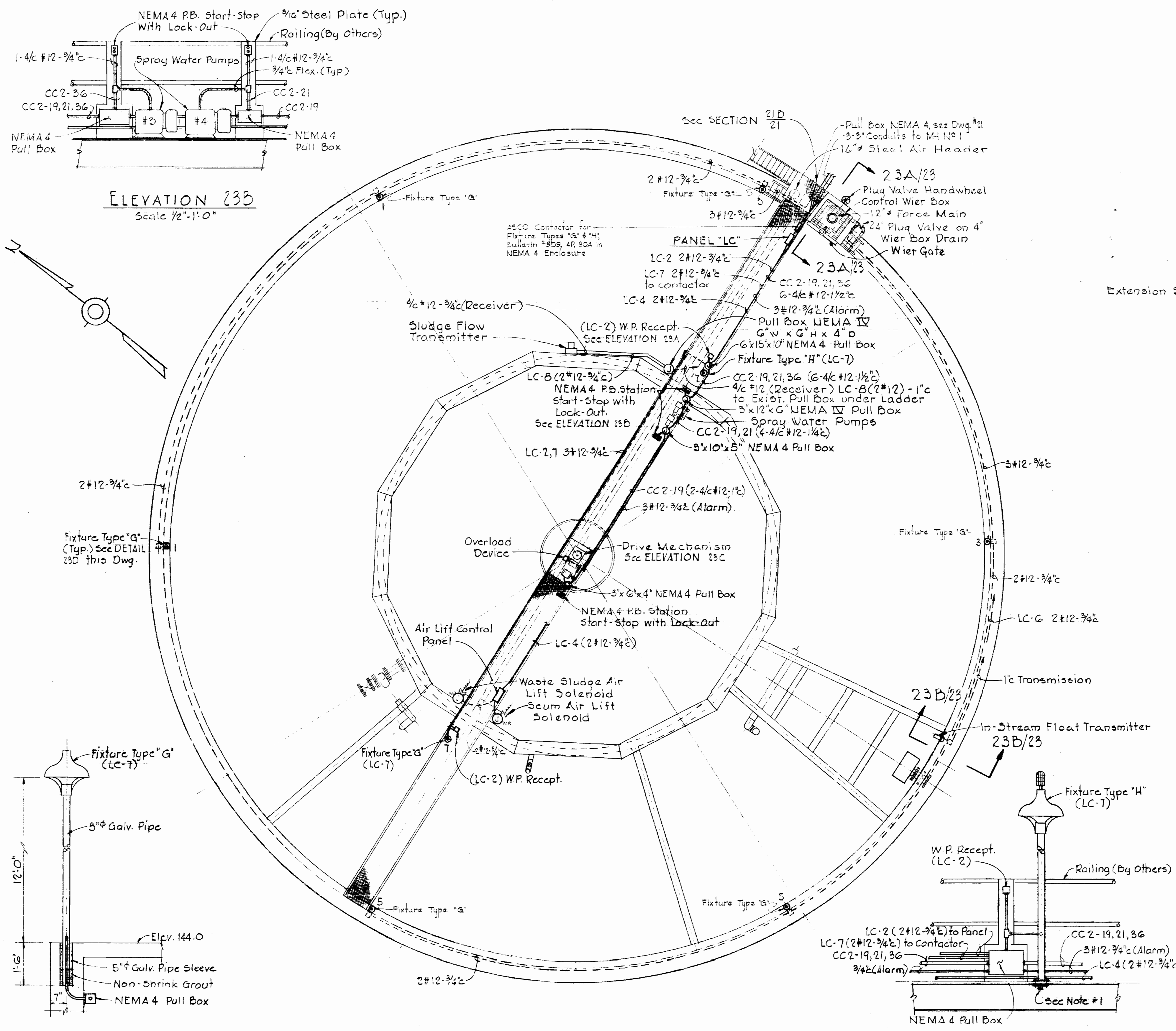
DRAWING
NO. 22
OF 33
SCALE
AS
SHOWN

AS BUILT 5/9/72

WS 237-S/22

NOTES

1. At each location of Lighting standard on center catwalk weld 2-3"x2"x3/8" to exist structure. Short leg down.



DETAIL 23D
Scale 1/2"=1'-0"

PLAN - TREATMENT UNIT No. 2
Scale: 1/8"=1'-0"

ELEVATION 23A
Scale 1/2"=1'-0"

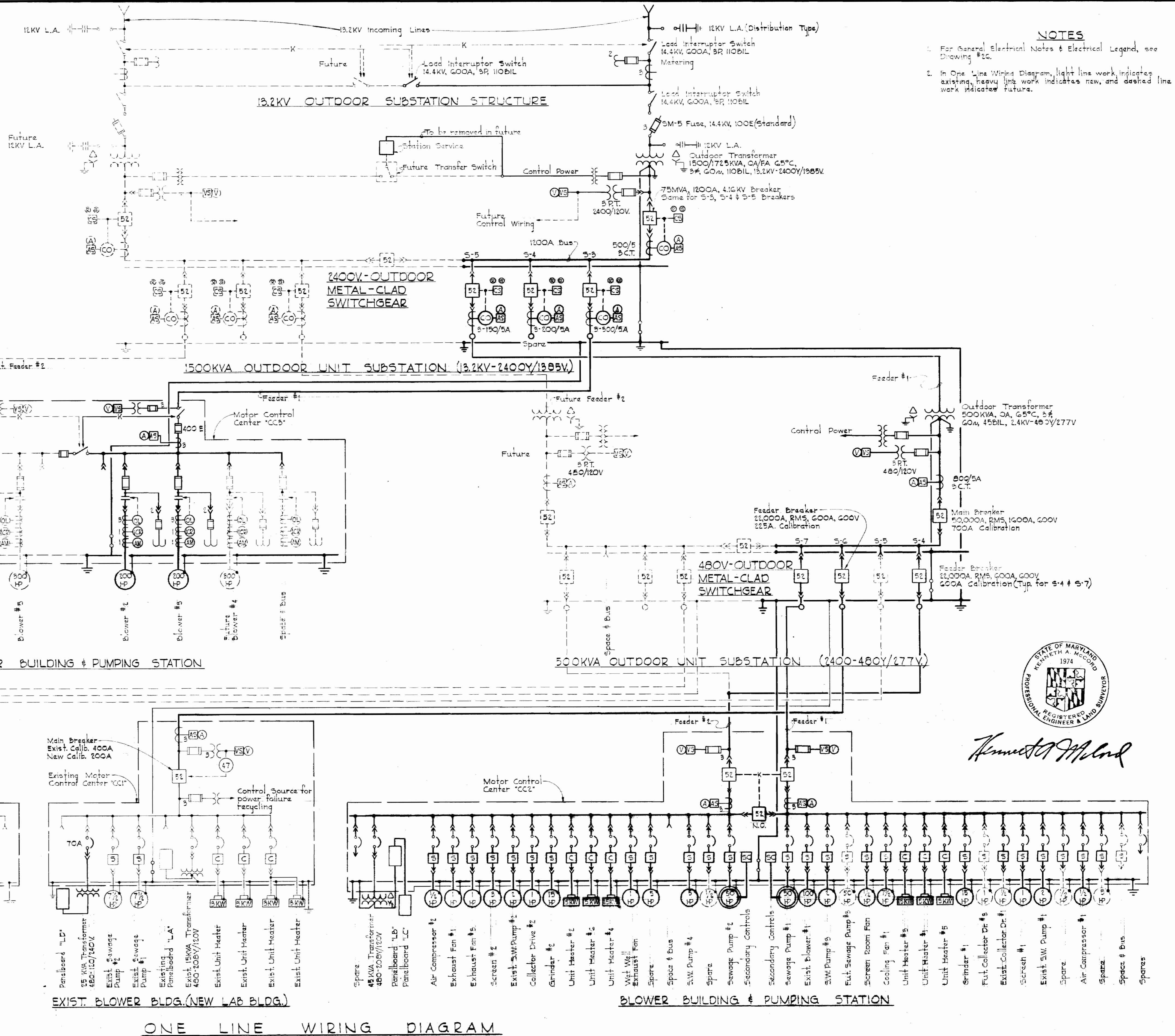
ELEVATION 23C
Scale 1/2"=1'-0"



Howard County Seal

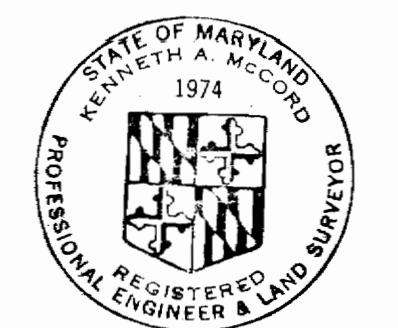
S 237-S/23

<p>WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND</p>	<p>HOWARD COUNTY DEPT. OF PUBLIC WORKS 4-11-69 DATE</p> <p><i>W O F</i> CHIEF ENGINEER</p>	<p>CONTRACT NO. 237-S</p>	<p>PLAN & DETAILS TREATMENT UNIT NO. 2</p>	<p>SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1</p>	<p>DRAWING NO. 23 OF 33</p> <p>SCALE AS SHOWN</p>
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NOTES

- For General Electrical Notes & Electrical Legend, see Drawing #26.
- In One Line Wiring Diagram, light line work indicates existing, heavy line work indicates new, and dashed line work indicates future.

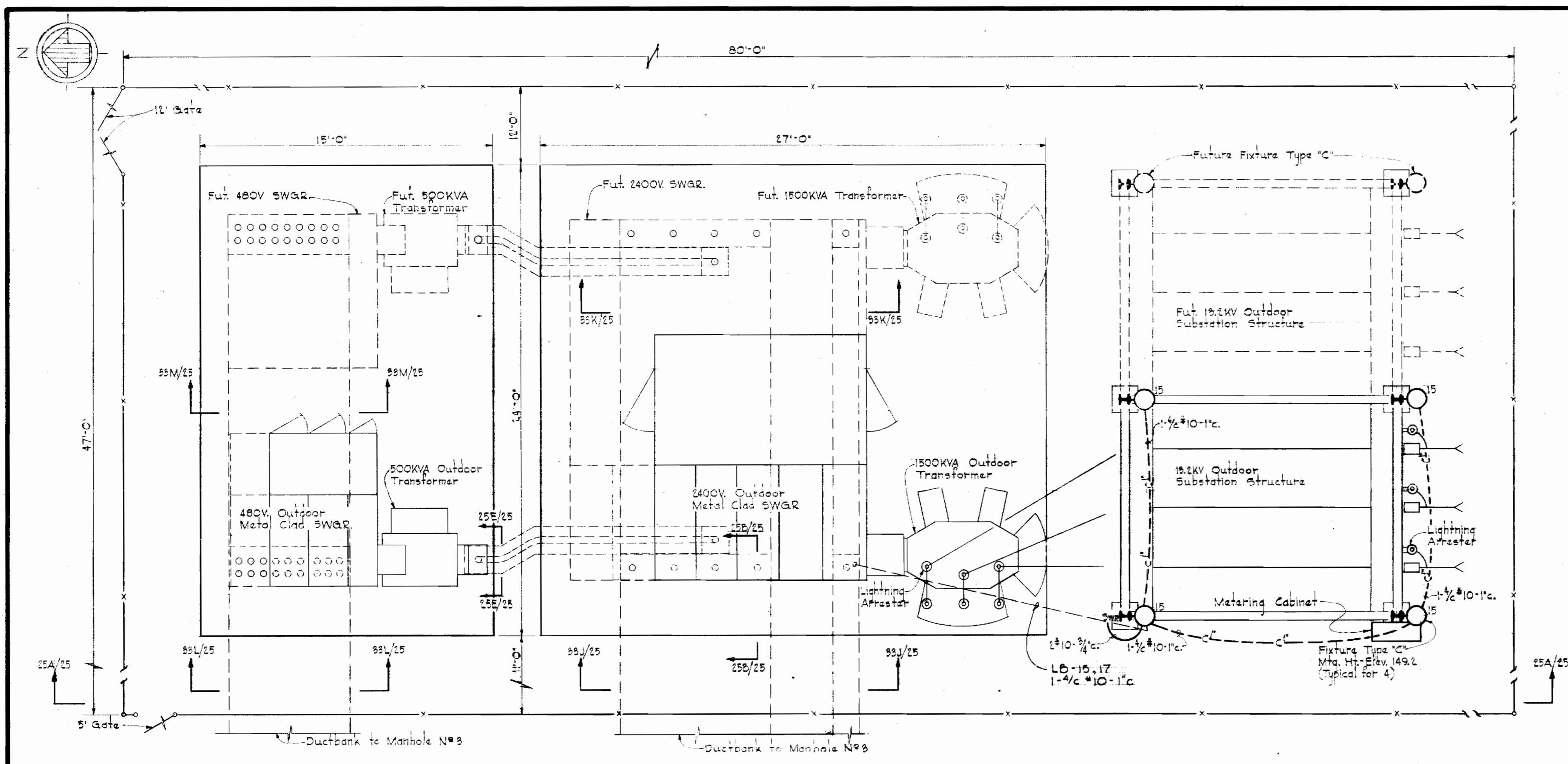


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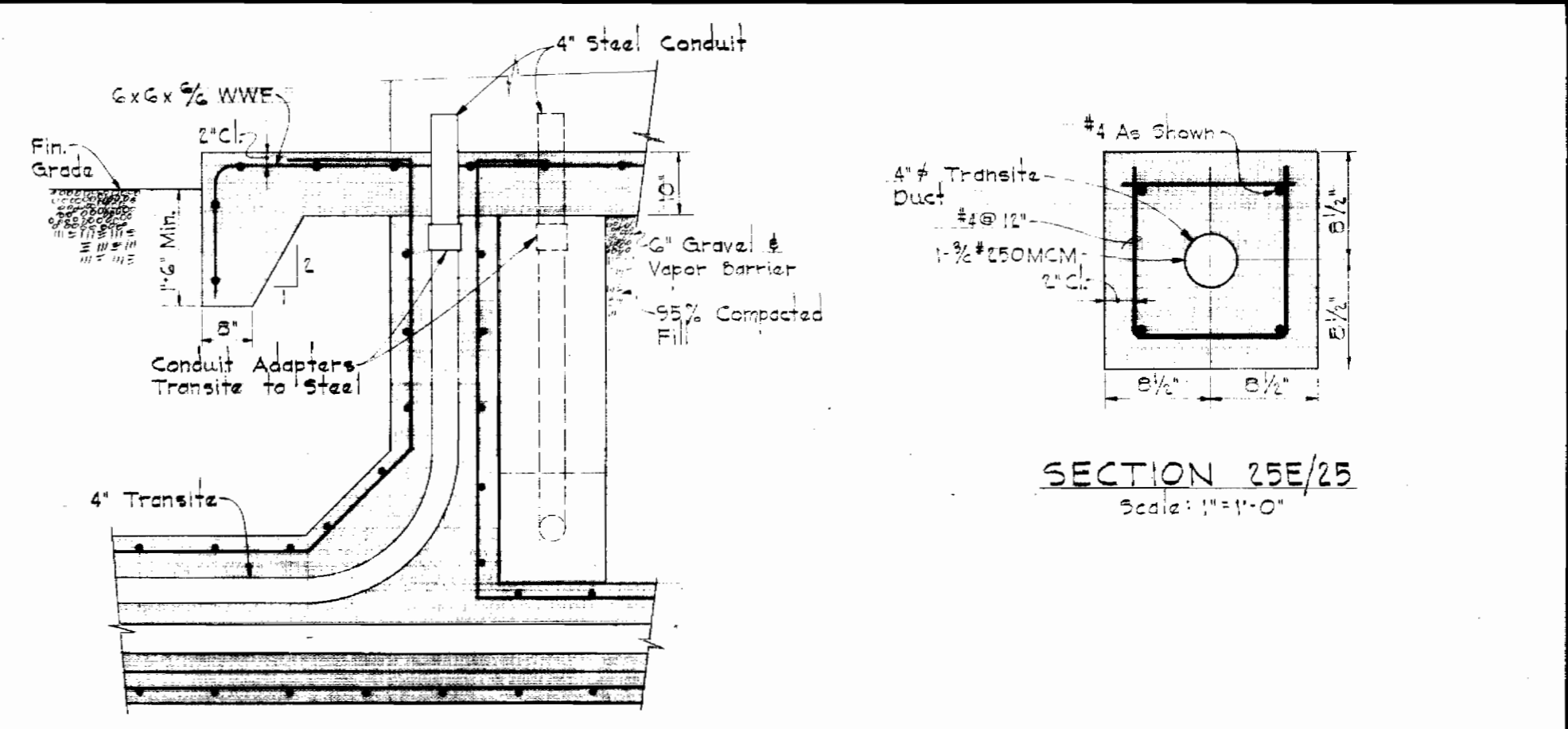
ONE LINE WIRING DIAGRAM

<p>WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND</p>	<p>HOWARD COUNTY DEPT. OF PUBLIC WORKS DATE: 4-11-69 WOP/Hub CHIEF ENGINEER</p>	<p>CONTRACT NO. 237-S</p>	<p>ELECTRICAL ONE LINE WIRING DIAGRAM</p>	<p>SAVAGE SEWAGE TREATMENT PLANT ADDITION NO.1</p>	<p>DRAWING NO. 24 OF 33 SCALE AS SHOWN</p>
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WS 237-S/24

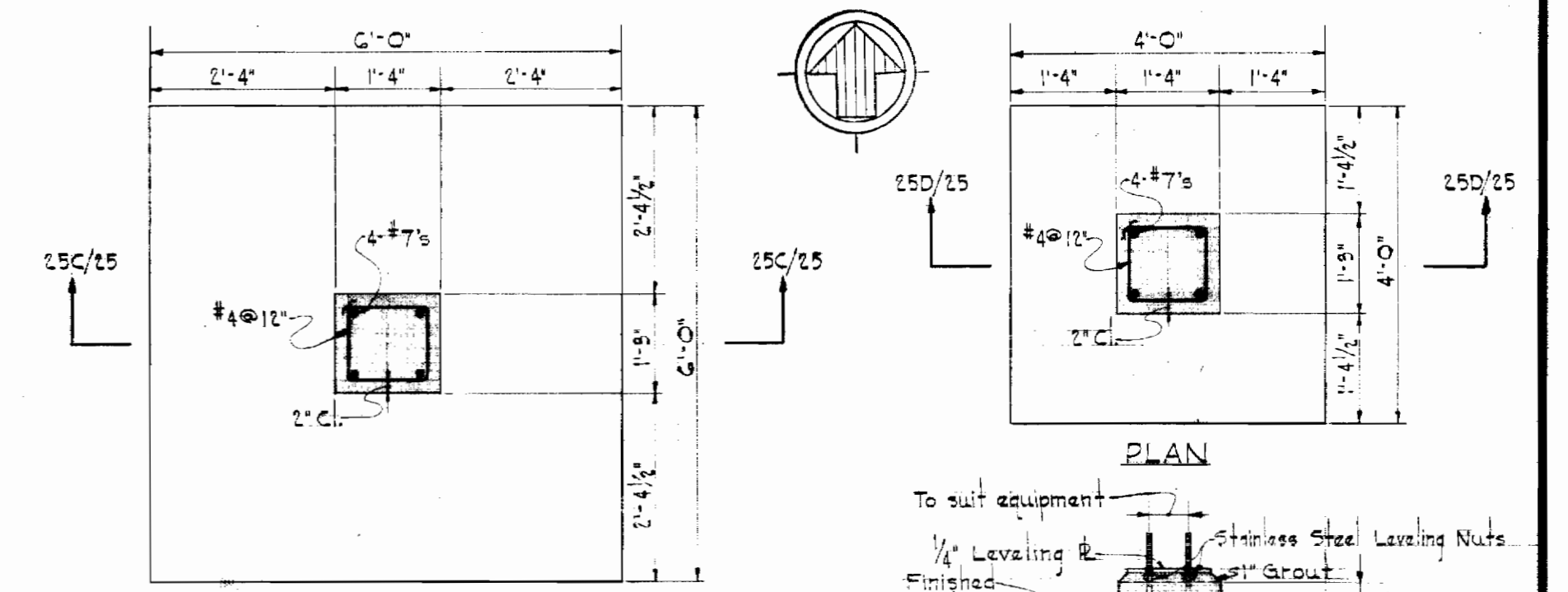


PLAN - OUTDOOR UNIT SUBSTATION
Scale: 1/4" = 1'-0"



SECTION 25E/25
Scale: 1/2" = 1'-0"

SECTION 25B/25
(Typical for conduits entering SWGR)
Scale: 1/2" = 1'-0"

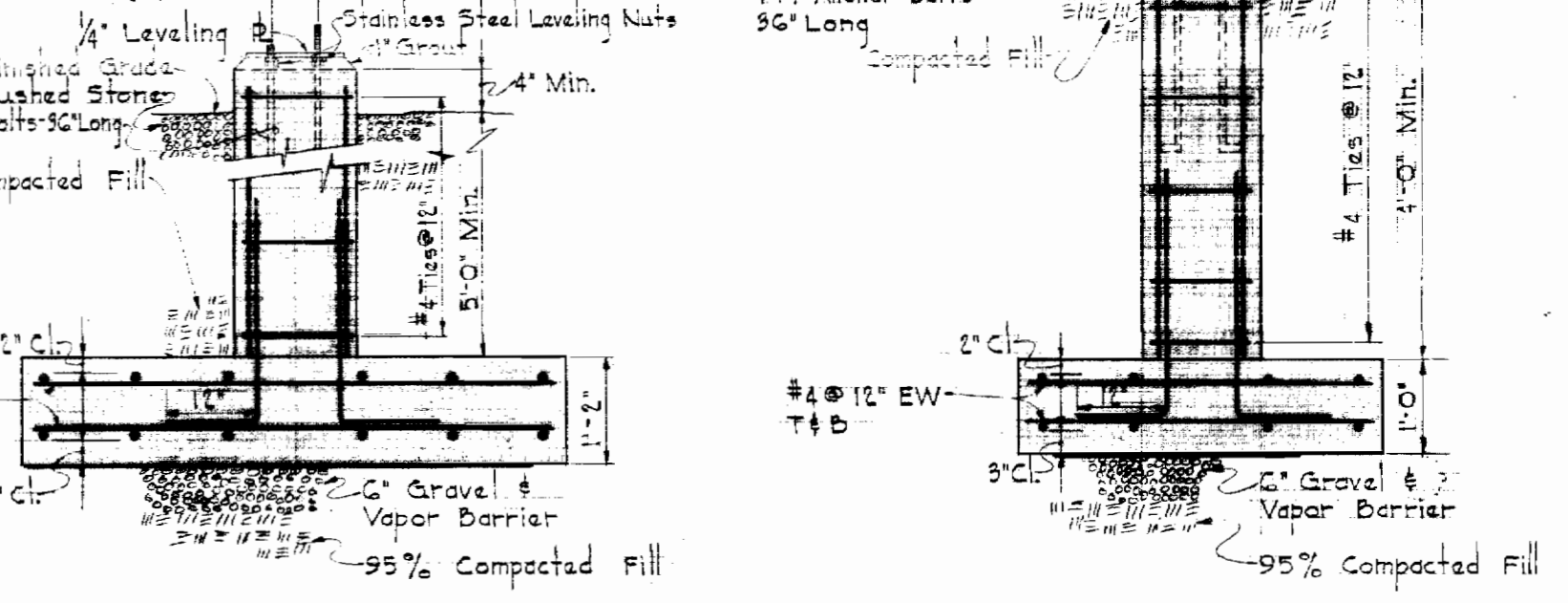


PLAN

PLAN

SECTION 25C/25

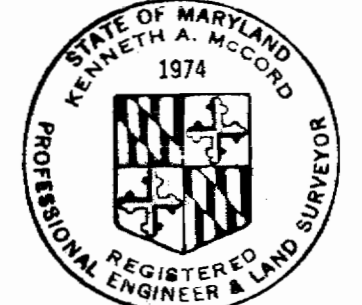
SECTION 25D/25



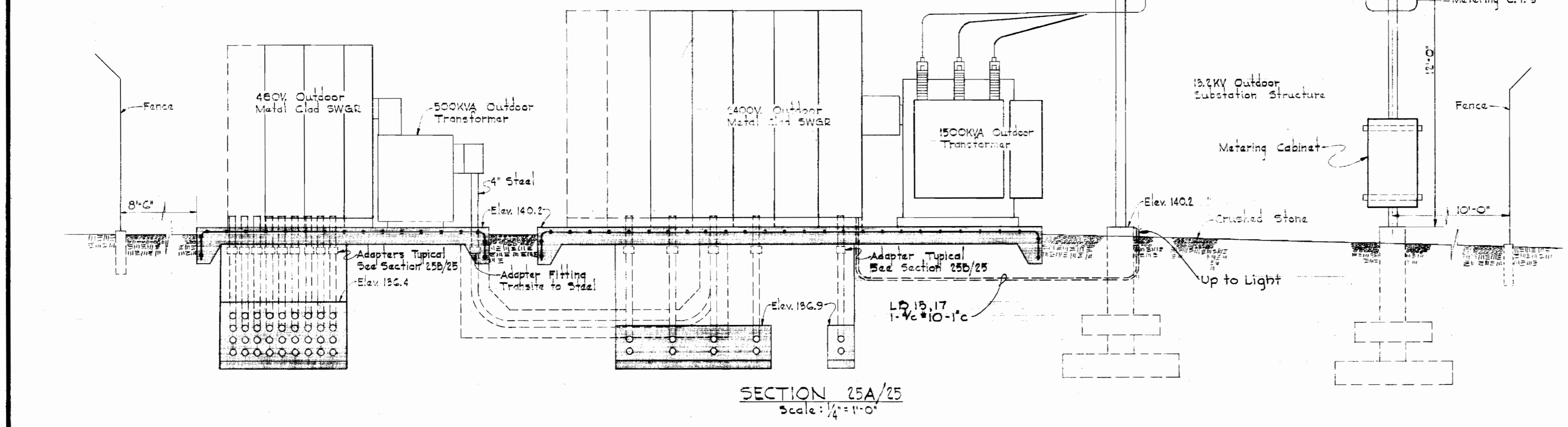
SECTION 25C/25
SECTION 25D/25
CENTER FOOTINGS
END FOOTINGS
13.2KV OUTDOOR SUBSTATION STRUCTURE
Scale: 1/4" = 1'-0"

NOTES

- 1. For General Electrical Notes & Electrical Legend, see Drawing #16.



Kenneth A. McCord



SECTION 25A/25
Scale: 1/4" = 1'-0"

<p>WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND</p>	<p>HOWARD COUNTY DEPT. OF PUBLIC WORKS 4-11-69 <i>W.O. Pillsbury</i> DATE CHIEF ENGINEER</p>	<p>CONTRACT NO. 237-S</p>	<p>ELECTRICAL OUTDOOR UNIT SUBSTATIONS</p>	<p>SAVAGE SEWAGE TREATMENT PLANT ADDITION NO.1</p>	<p>DRAWING NO. 25 OF 33 SCALE AS SHOWN AS BUILT 3/2/72</p>
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NS 237-S/25

A1	A6	A11	A16
A2	A7	A12	A17
A3	A8	A13	A18
A4	A9	A14	A19
A5	A10	A15	A20

ANNUNCIATOR WINDOWS
Scale: 3/16" = 1"

ANNUNCIATOR WINDOW SCHEDULE			
N#	INSCRIPTION	N#	INSCRIPTION
A1	HIGH WATER LEVEL WET WELL	A11	COLLECTOR OVERLOAD UNIT N#1
A2	LOW WATER LEVEL WET WELL	A12	COLLECTOR OVERLOAD UNIT N#2
A3	LOW AIR PRESSURE STATION AIR	A13	COLLECTOR OVERLOAD UNIT N#3 (Future)
A4	AIR SURGE BLOWER N#1	A14	Blank (Space)
A5	AIR SURGE BLOWER N#2	A15	Blank (Space)
A6	AIR SURGE BLOWER N#3	A16	Blank (Space)
A7	AIR SURGE BLOWER N#4	A17	Blank (Space)
A8	Blank (Space)	A18	Blank (Space)
A9	Blank (Space)	A19	Blank (Space)
A10	Blank (Space)	A20	Blank (Space)

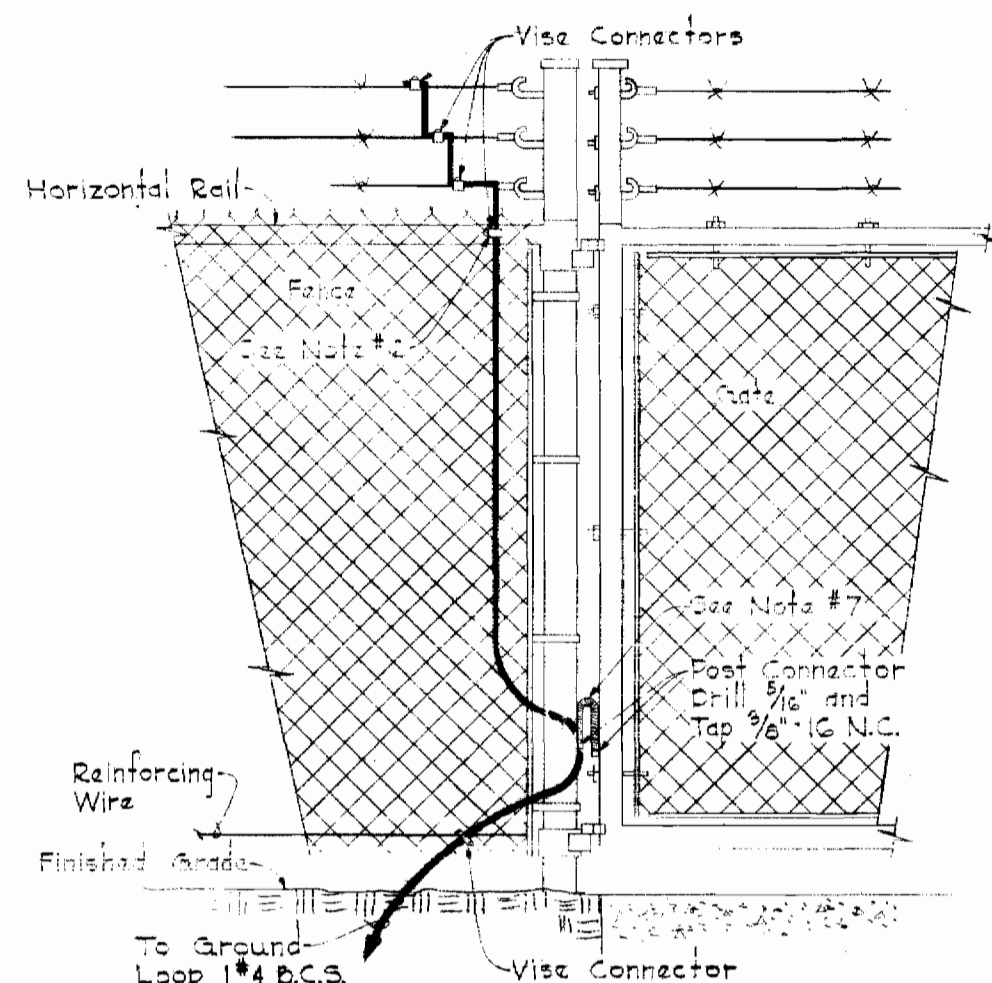
ANNUNCIATOR N#1 ALARM DETAILS
Scale As Shown

A1	A5	A5
A2	A4	AC

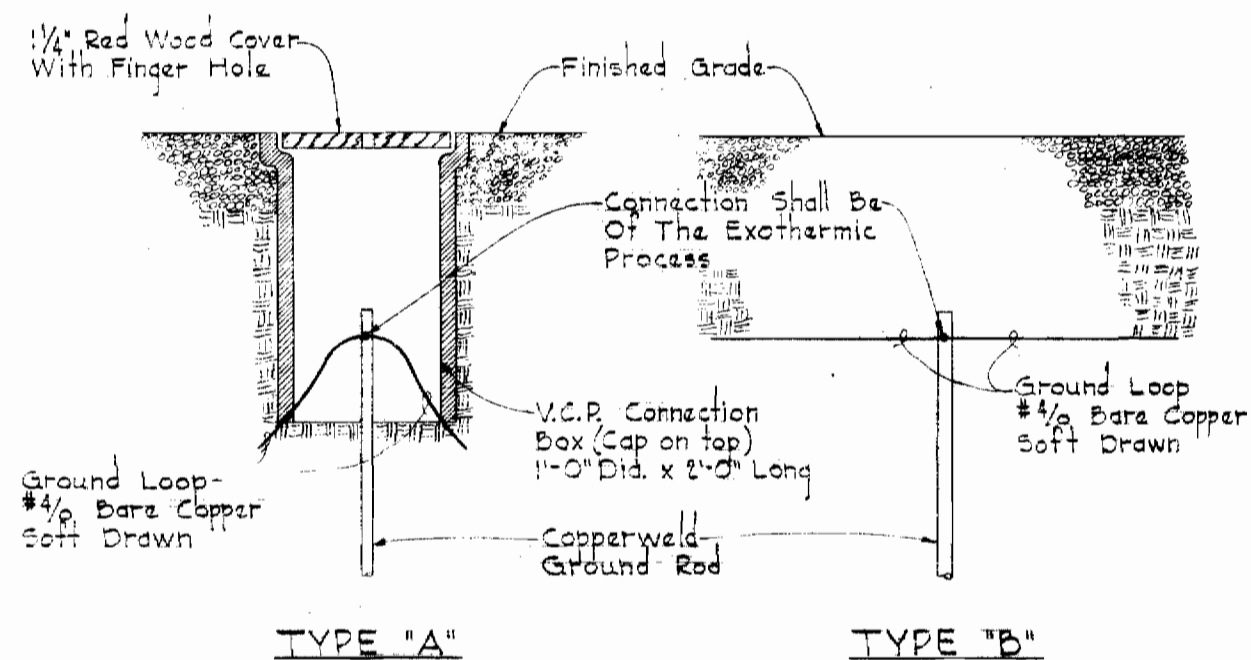
ANNUNCIATOR WINDOWS
Scale: 3/16" = 1"

ANNUNCIATOR WINDOW SCHEDULE			
N#	INSCRIPTION	N#	INSCRIPTION
A1	AIR SURGE BLOWER UNITS	A4	Blank (Space)
A2	OVERLOAD COLLECTOR DRIVES	A5	Blank (Space)
A3	ABNORMAL WET WELL	A6	Blank (Space)

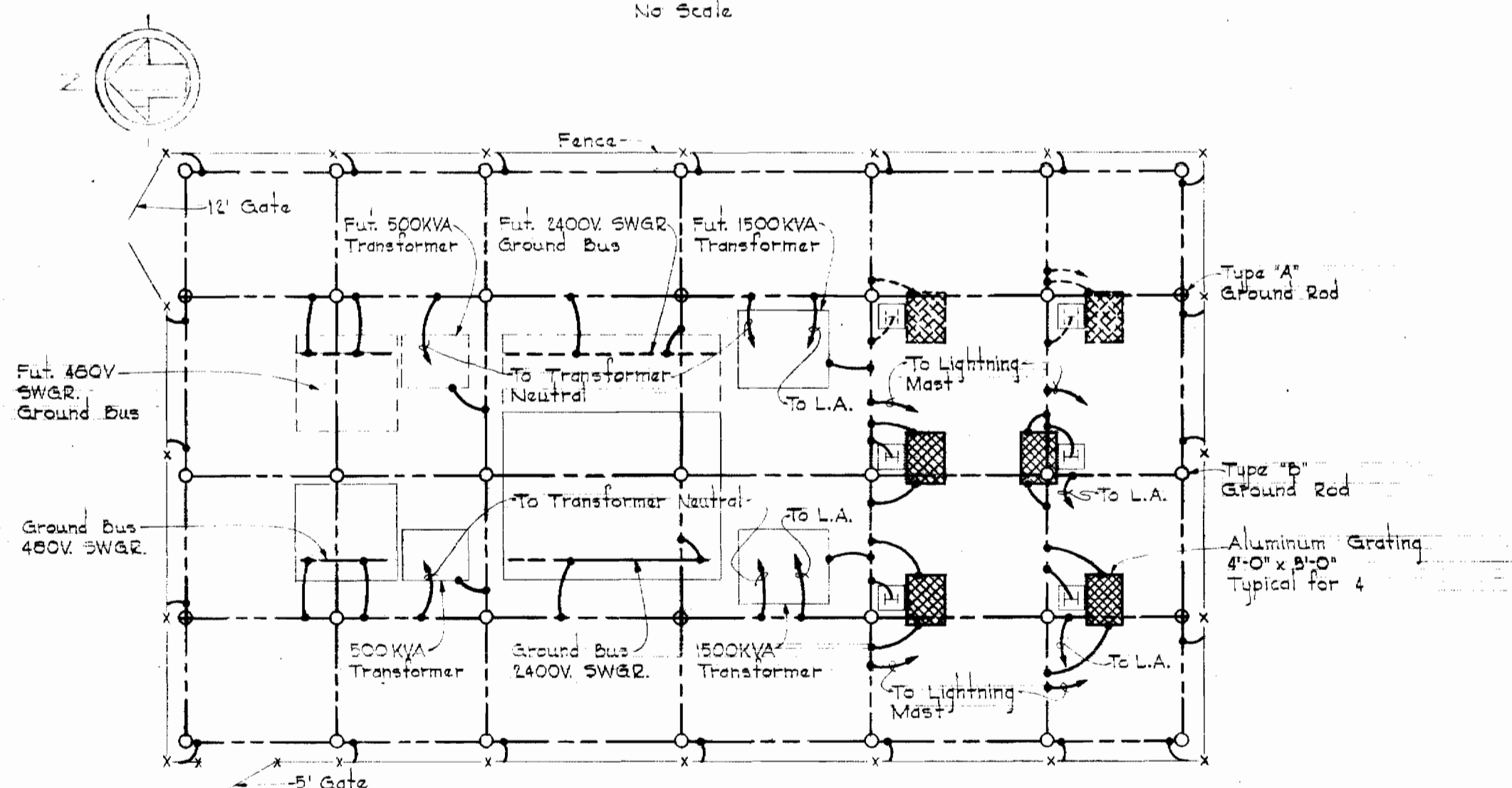
ANNUNCIATOR N#2 ALARM DETAILS
Scale As Shown



FENCE AND GATE GROUNDING DETAIL FOR OUTDOOR SUBSTATIONS
No Scale



GROUND ROD DETAILS
No Scale



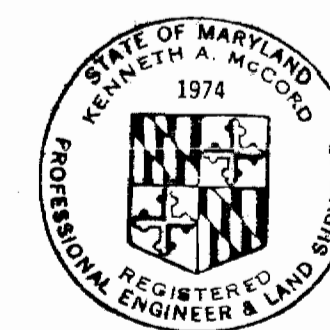
GROUNDING PLAN FOR OUTDOOR SUBSTATIONS
Scale: 3/32" = 1'-0"

GENERAL ELECTRICAL NOTES

- For Panelboard Schedules, See Specifications, Detailed Electrical Requirements.
- For Lighting Fixture Types, See Specifications, Detailed Electrical Requirements.
- Verify All Door Swings Before Installing Switches.
- For Plan Of Outside Electrical Work, See Drawing #8.
- For Electrical Work At Treatment Unit #2, See Drawings #21 & 22.
- The Vertical Copper Ground Wire Is To Be Connected To The Horizontal Fence Rail By Means Of A Connector, 3/8"-16 Thread.
- Flexible Copper Braid Is To Be Mounted So That It Will Not Be Subjected To Damaging Strain When Fence Gates Are Fully Open.
- Mounting Heights For Lighting Fixtures Shall Be From Finished Floor To Bottom Of Fixture Unless Otherwise Noted.

ELECTRICAL LEGEND

- Outlet: Incandescent - Ceiling
- Outlet: Incandescent - Wall
- ⊙ Junction Box
- Outlet: Fluorescent - 4 Foot
- ⊙-○ Outlet: Convencience - Mtg. Ht. - 2'-0"
- ⊙-○ Indicating Light - Color As Noted
- Outlet: Special Purpose
- S S# Switch: Single Pole - Two Pole With Pilot Light
- 3S S# Switch: Three Way - Four Way
- S M C Switch: Momentary Contact
- ⊞ Contactor
- ⊞ ⊞ Thermostat: Heating - Cooling
- ⊞ Unit Heater
- ⊞ Aquastat
- ⊞ Motor
- ⊞ ⊞ Starter: Manual - Magnetic
- ⊞ Solenoid
- ⊞ ⊞ Combination Starter
- ⊞ Running Time Meter
- ⊞ ⊞ Disconnect Switch: Fused - Unfused
- ⊞ Pull Box - Size As Noted
- ⊞ Lighting Panel
- ⊞ Power Panel
- ⊞ Conduit Seal
- ⊞ Conduit - Telephone
- ⊞ Conduit - In Or Under Floor
- ⊞ Conduit - On Ceiling Or Wall
- ⊞ Homerun To Panelboard - No. Of Arrows Indicates No. Of Circuits - No. Of Cross Lines Indicate No. Of Wires - Where No Cross Lines Appear, 2 Conductors Are Implied.
- ⊞ Pushbutton Station - Lockout Stop
- ⊞ Pushbutton Station - Start - Lockout Stop
- ⊞ Timer - Number As Noted
- ⊞ Telephone Outlet
- ⊞ Telephone Or Signal Cabinet
- ⊞ Outlet: 20A, 250V, Receptacle & Plug
- WR EXP Waterproof - Explosion-proof Where Noted
- ⊞ Ductbank - No. Of Ducts As Indicated - With Manhole
- ⊞ Thermostat
- ⊞ Interrupter Switch
- ⊞ Pressure Switch
- ⊞ Disconnect Link
- ⊞ Air Circuit Breaker
- ⊞ Selector Switch
- ⊞ Conduit - Stub-Up - Stub-Down
- ⊞ Current Relay, Device #50 & #51
- CC-7b Unit & Run Number - See M.C.C. Schedules
- ⊞ Key Interlock
- ⊞ Contactor - Normally Open - Normally Closed
- ⊞ Current Transformer
- ⊞ Potential Transformer
- ⊞ Power Transformer
- ⊞ Ground
- ⊞ Fuse
- ⊞ Pothead
- ⊞ Incoming Line
- ⊞ Lightning Arrestor
- ⊞ Ammeter - Ammeter Switch
- ⊞ Voltmeter - Voltmeter Switch
- ⊞ Power Circuit Breaker
- ⊞ Underground Conduit - Size As Indicated



Kenneth A. McCord

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
4-11-69 W.O.P. G950
DATE CHIEF ENGINEER

CONTRACT NO. 237-S

ELECTRICAL
LEGEND, GENERAL NOTES
AND MISC DETAILS

SAVAGE SEWAGE
TREATMENT PLANT ADDITION NO.1

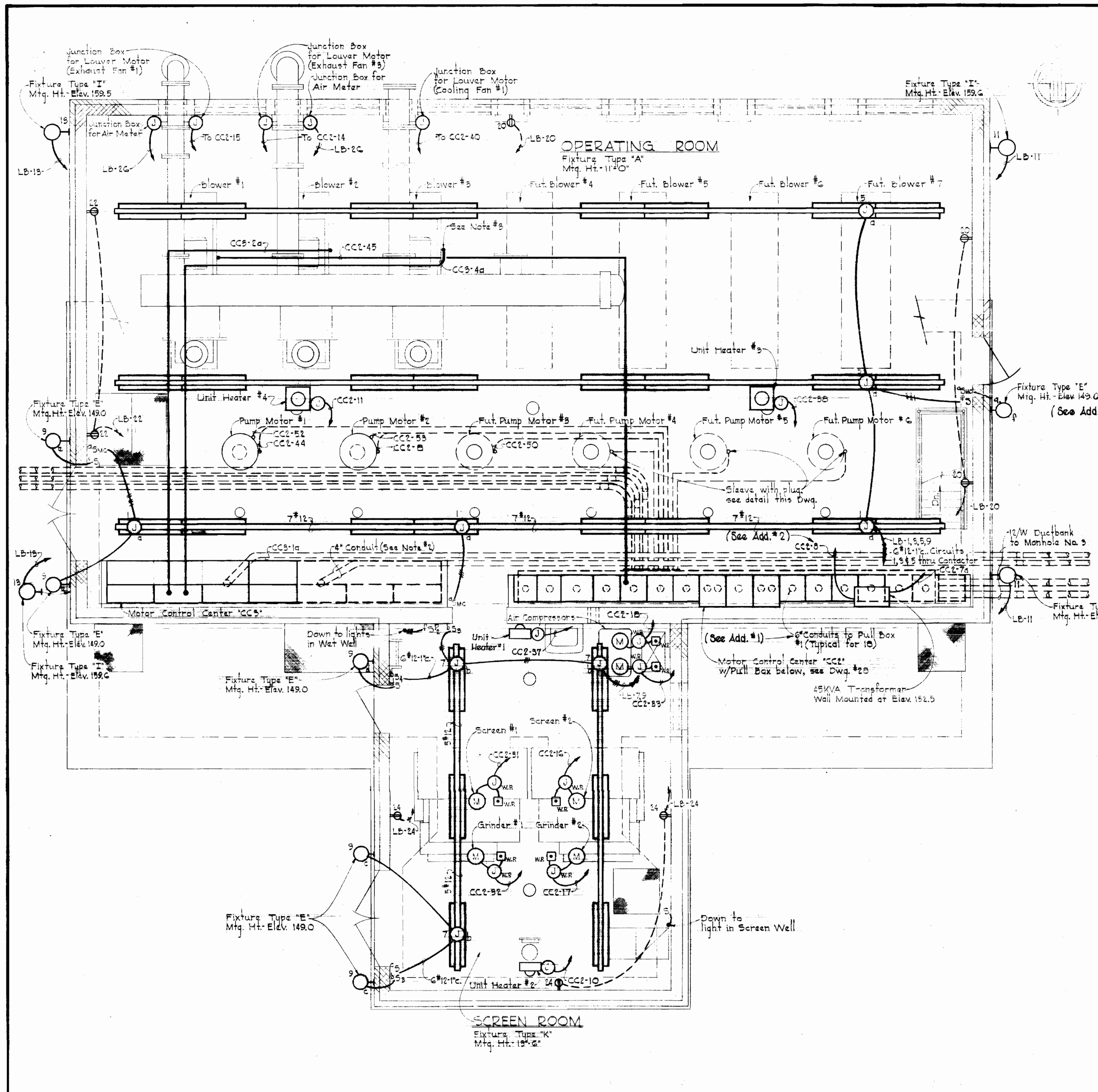
DRAWING
NO. 26
OF 33
SCALE
AS
SHOWN

WS 237-S/26

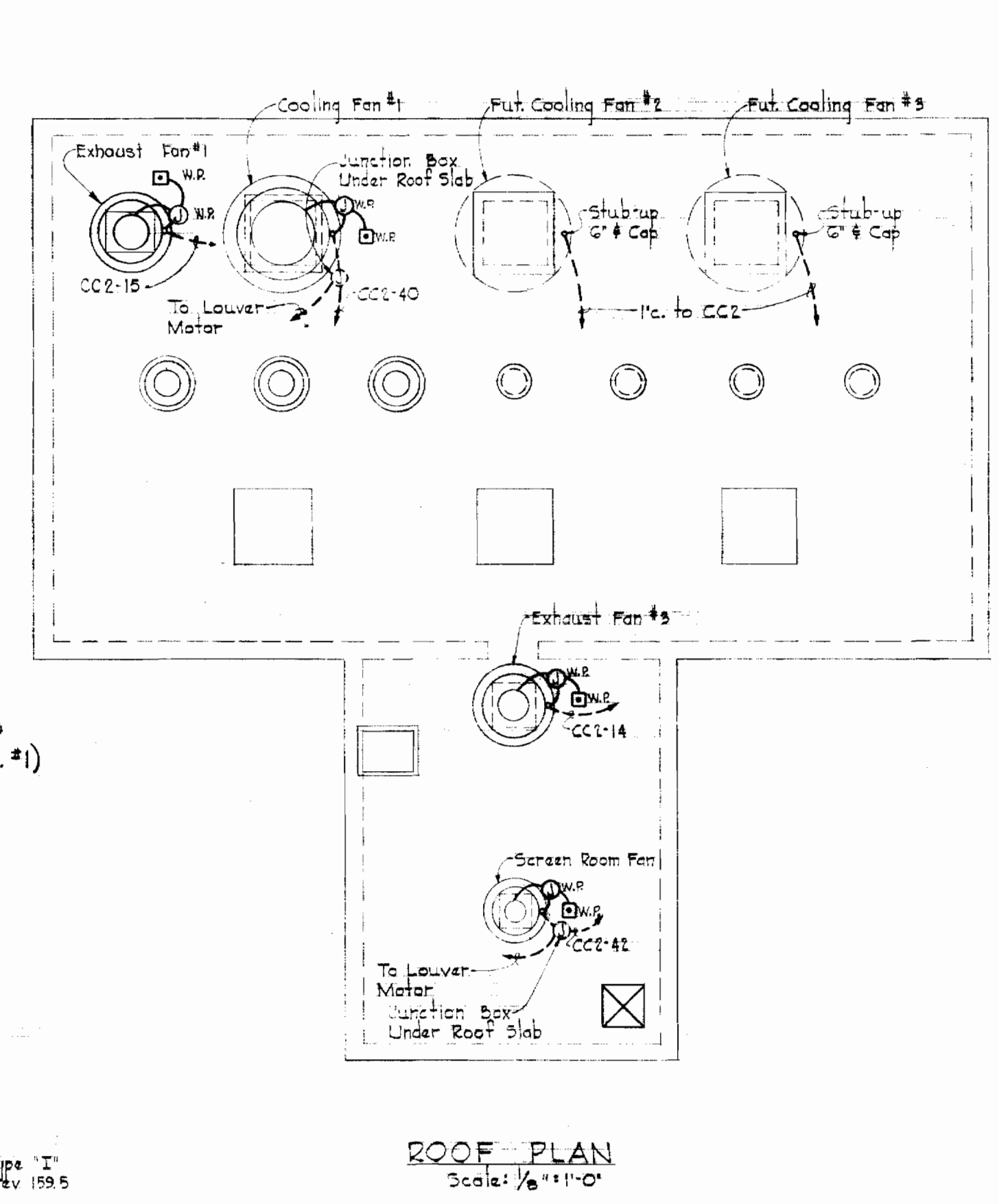
WS 237-S/27

Suspenders

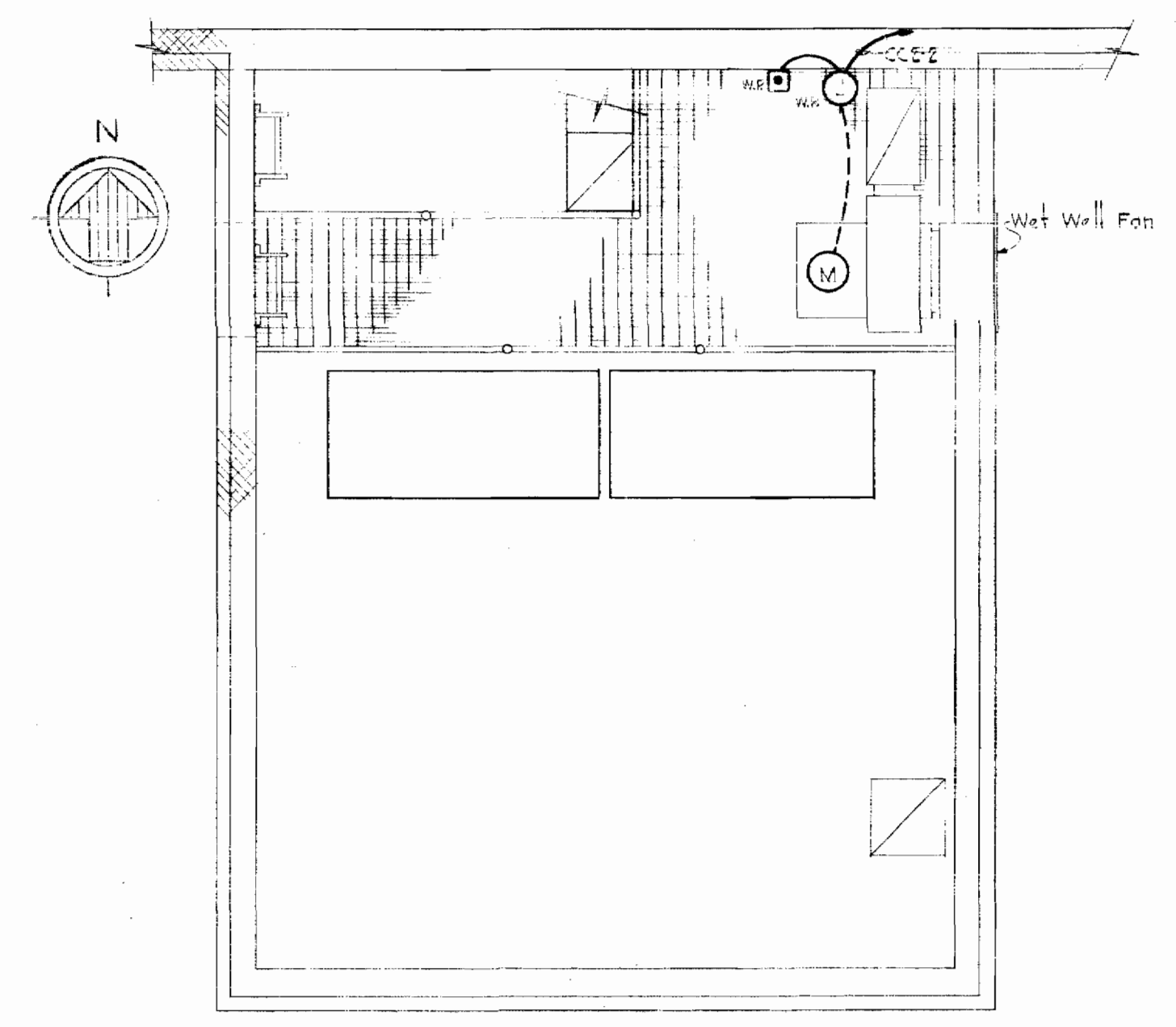
Suspenders



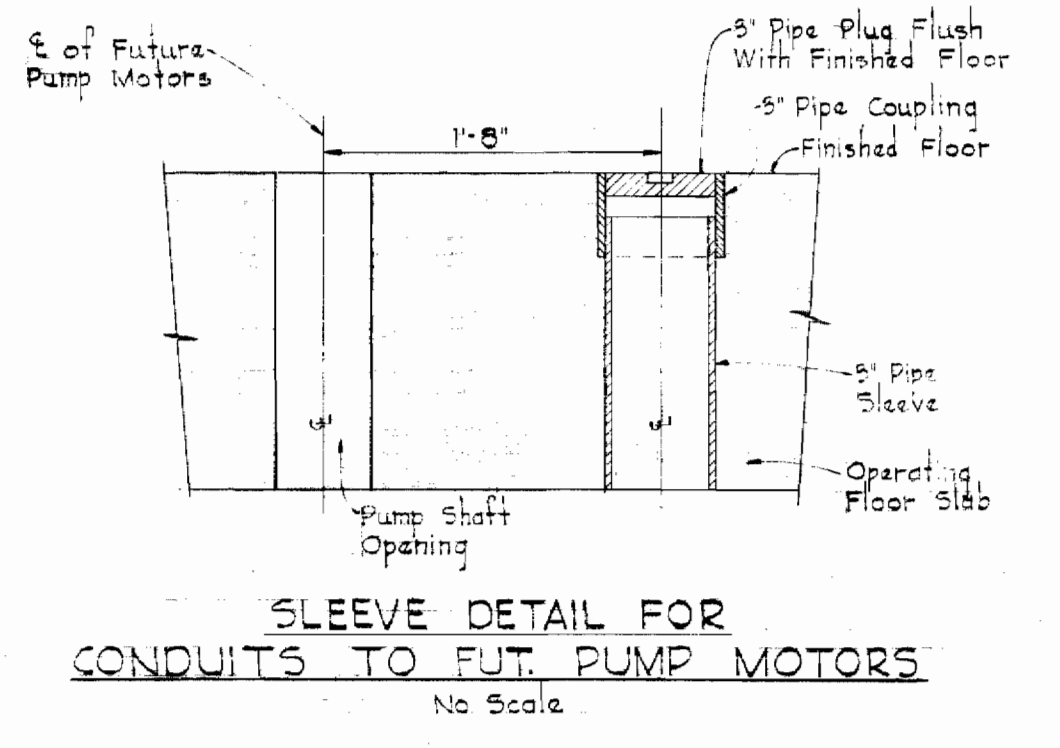
OPERATING FLOOR PLAN
Scale: 1/4" = 1'-0"



ROOF PLAN
Scale: 1/8" = 1'-0"

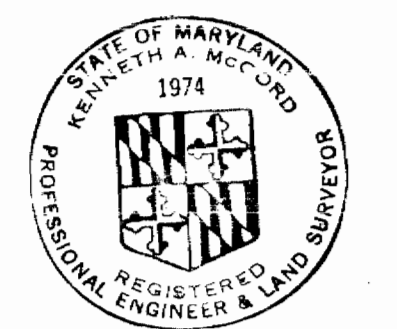


SCREEN ROOM PLAN AT ELEV. 154.0
Scale: 1/4" = 1'-0"



SLEEVE DETAIL FOR
CONDUITS TO FUT. PUMP MOTORS
No Scale

- NOTES**
- For General Electrical Notes & Electrical Legend, see drawing #26.
 - Four inch conduit for future 2400 volt feeder shall be stubbed-up 1 1/2 inches above mounting pad & capped.
 - Conduits for the feeders to blowers #1, #2 & #3 shall be anchored to the floor with a pipe flange, and a tee cap shall be provided in the run of the motor elevation for the connection to the motor with waterproof flexible conduit.



Kenneth A. McCord

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS 4-11-69 <i>W.O. Gilbert</i> DATE CHIEF ENGINEER	CONTRACT NO. 237-S	ELECTRICAL BLOWER BLDG. & PUMPING STA. POWER AND LIGHTING PLANS	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO.1	DRAWING NO. 27 OF 33 SCALE AS SHOWN
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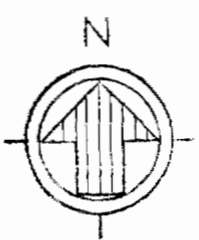
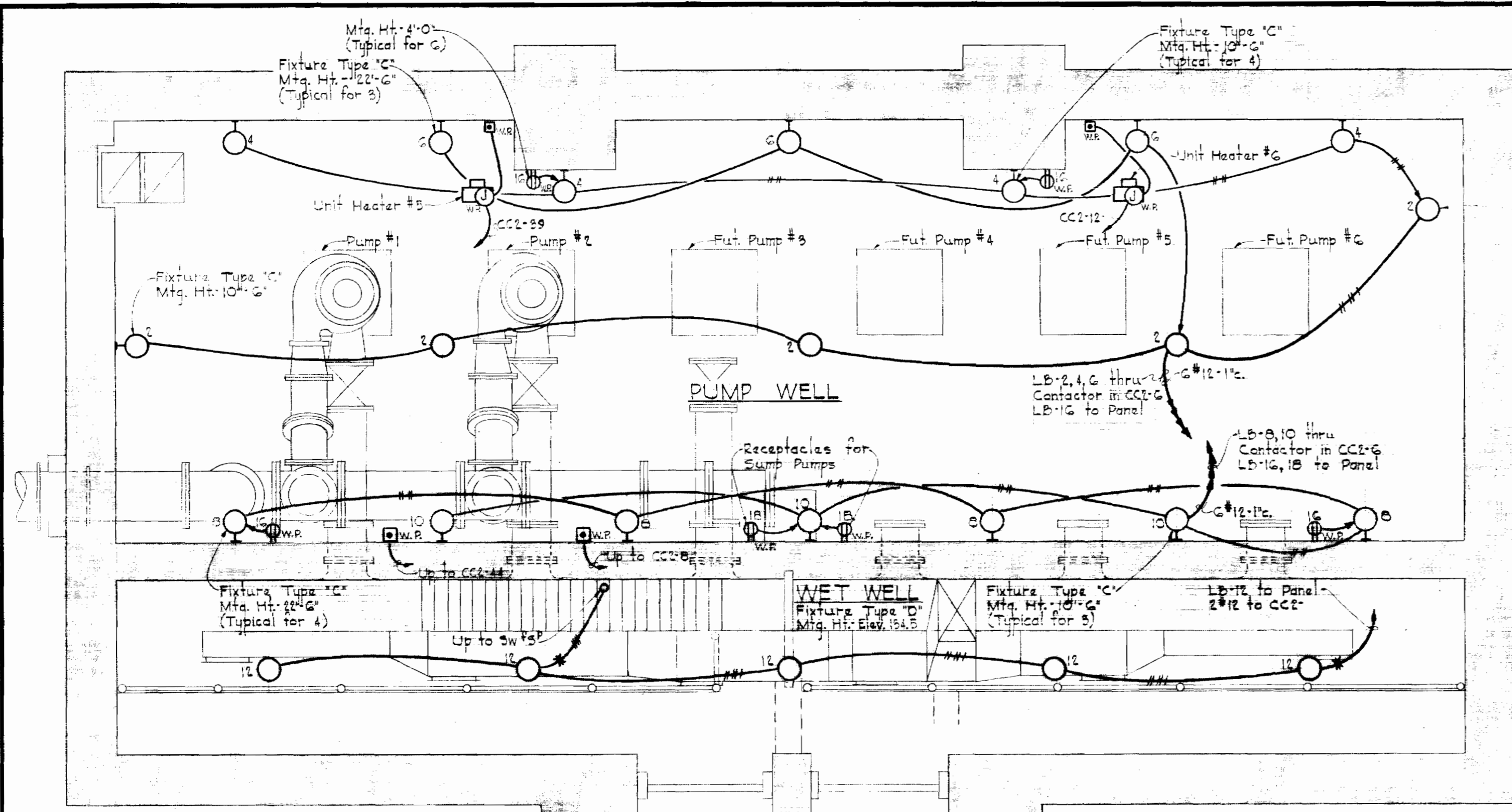
W.O. 6050

AS BUILT 5/3/72

SUSPENDED

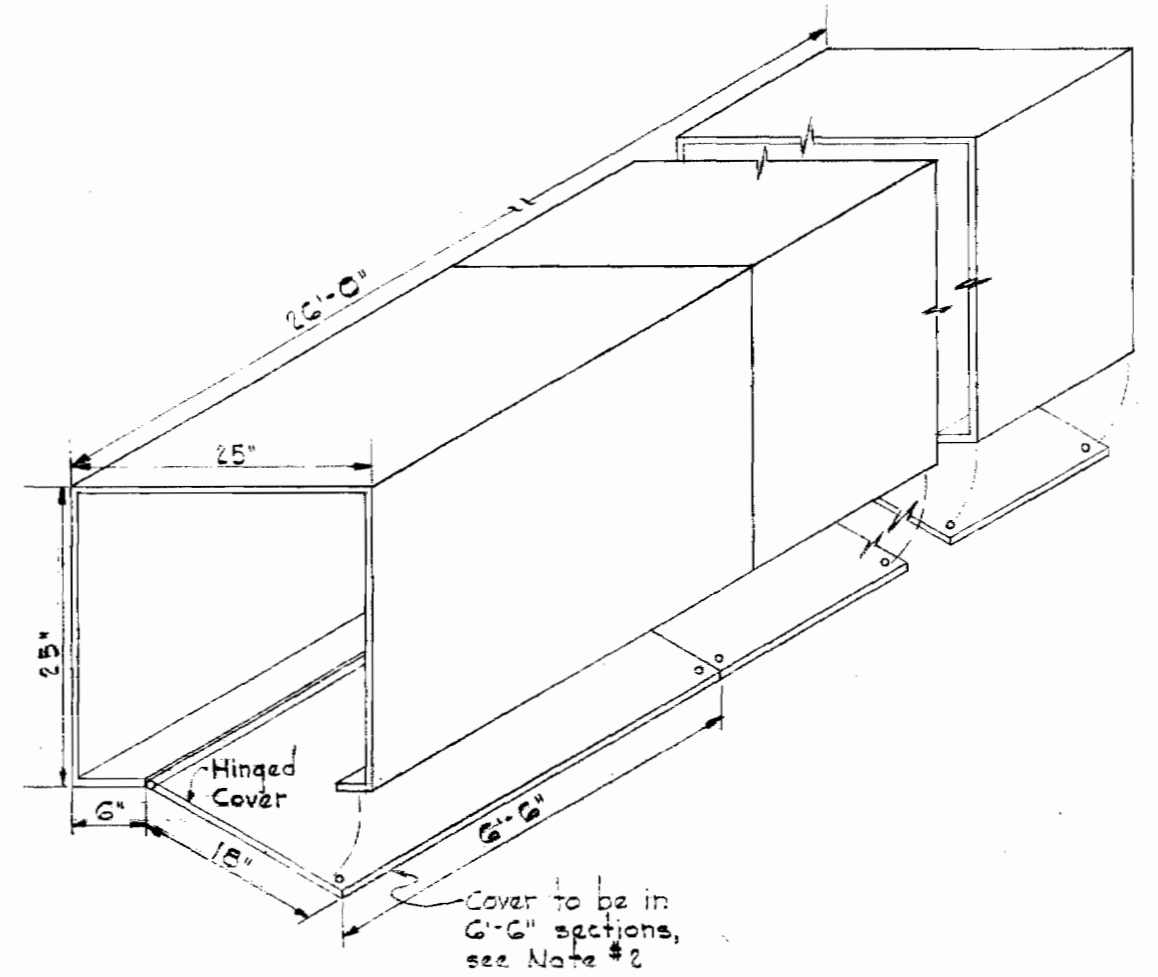
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SUSPENDED



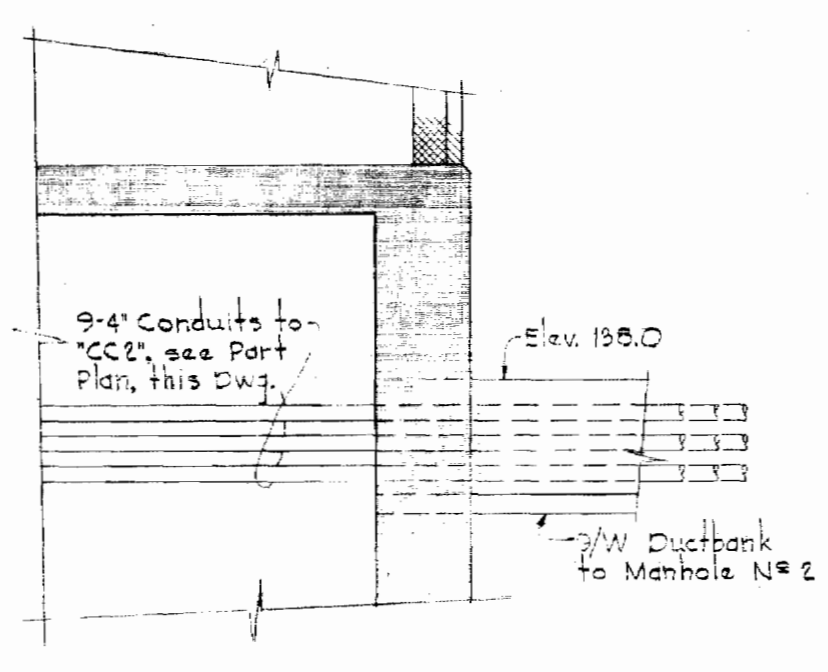
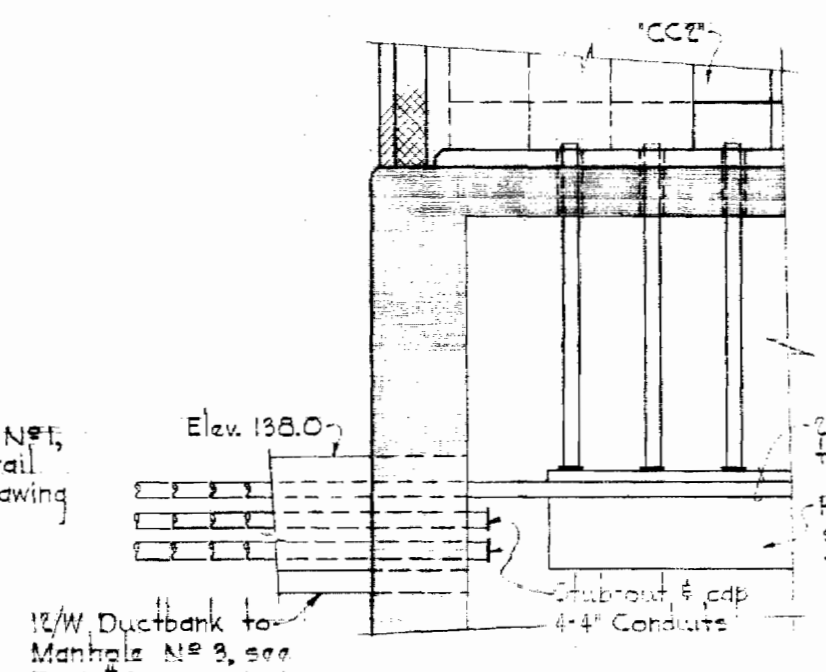
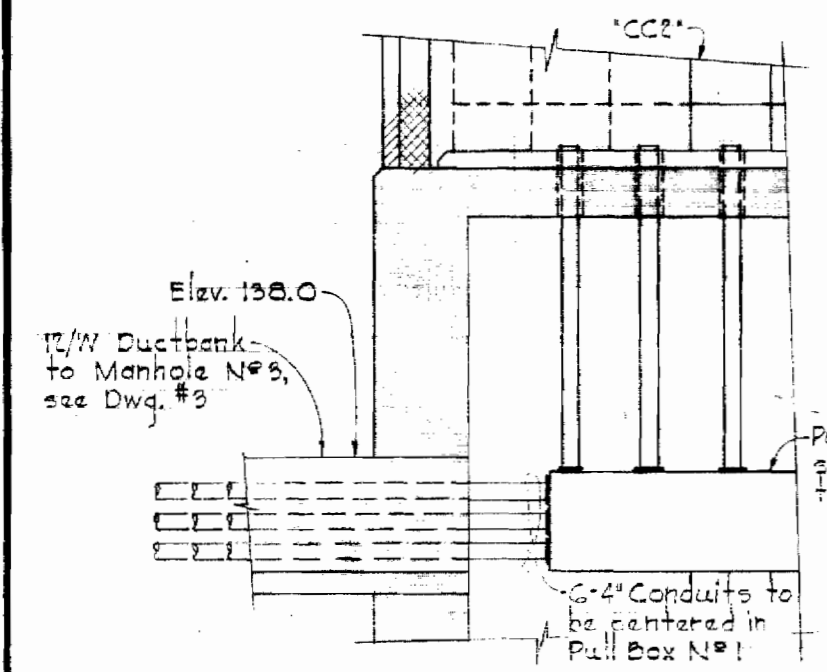
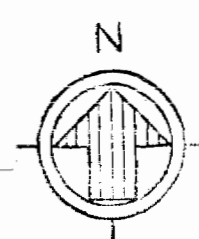
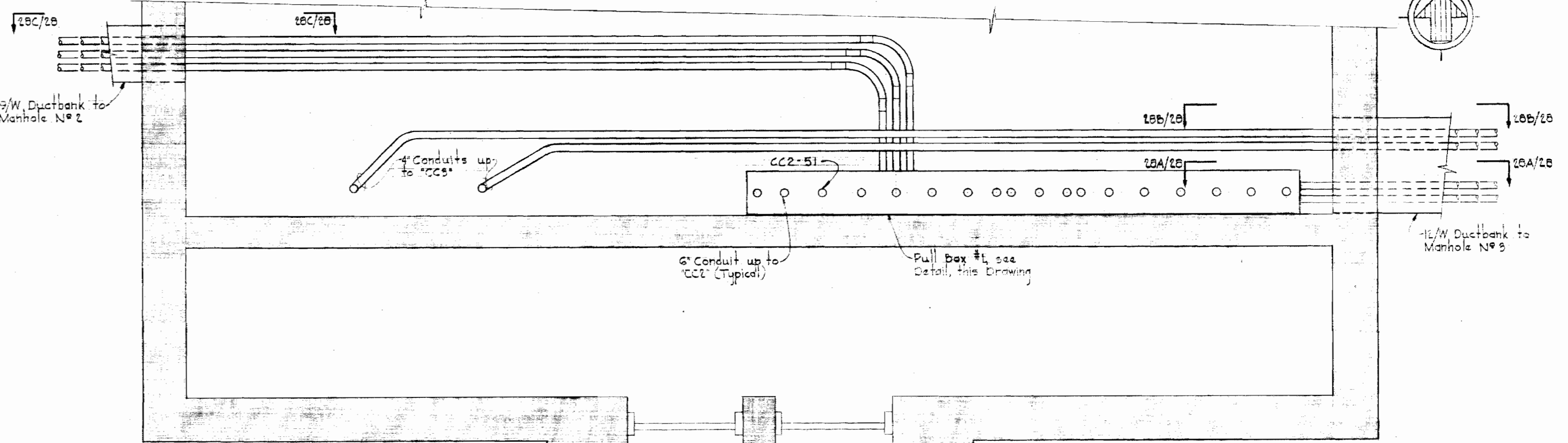
NOTES

1. For General Electrical Notes & Electrical Legend, See Drawing #22.
2. Provide two (2) tiers of removable cable supports in Pullbox N#1 on 4 foot centers.

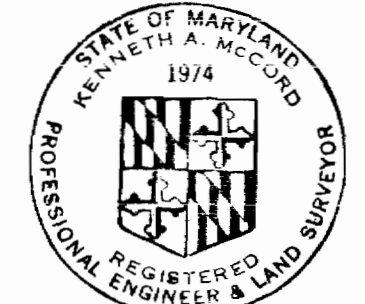


SCREEN WELL
Fixture, Type 'D'
Mtg. Ht. Elev. 134.5

PLAN AT ELEV. 130.0
Scale: 1/4" = 1'-0"



Screen #1 Screen #2



Kenneth A. McLeod

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
4-11-69
DATE

W.O. Goso
CHIEF ENGINEER

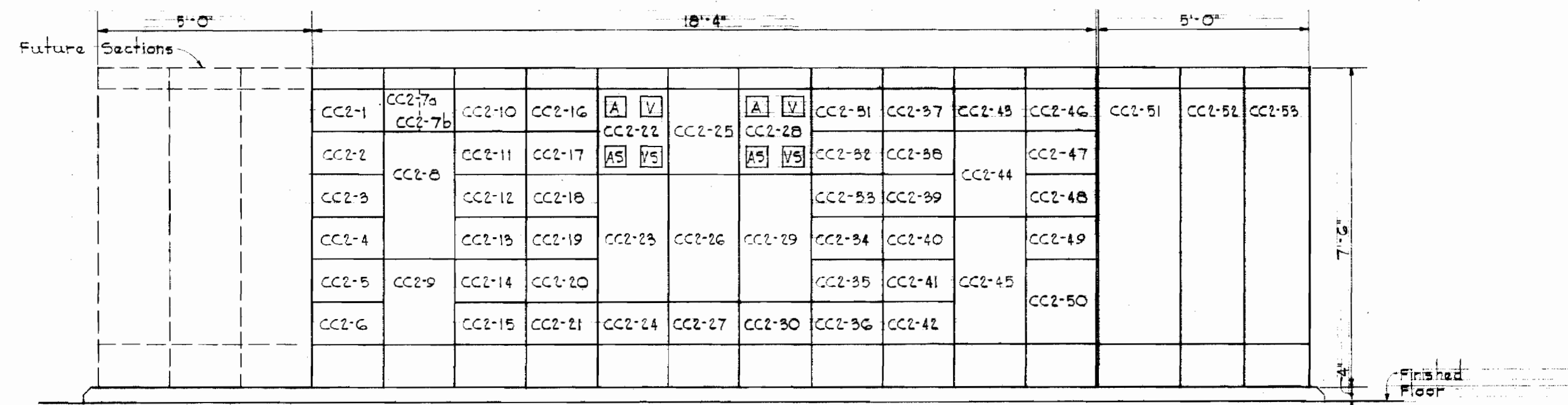
CONTRACT NO. 237-S

ELECTRICAL
BLOWER BLDG. & PUMPING STA.
POWER & LIGHTING PLANS

SAVAGE SEWAGE
TREATMENT PLANT ADDITION NO.1

DRAWING NO. 28 OF 33
SCALE AS SHOWN

WS 237-S/28



ELEVATION - MOTOR CONTROL CENTER "CC2"
Scale: 3/8" = 1'-0"

(See Add. #2)

MOTOR CONTROL CENTER SCHEDULE "CC2" (480V)													
Unit # Run Number	NAMEPLATE DATA	DEVICE DESCRIPTION	HP or KVA	Aux. Descr.	BREAKER				WIRE			Ground Wire Size	Conduit
					Frame	Poles	Calib.	A.I.C.	No.	Size	Type		
CC2-1	Blank (Spare)	Combination Starter Size 1, FVNR	1/2	a,b,c,d,f	F	3	15	4	-	-	-	-	-
CC2-2	Wet Well Exhaust Fan	Combination Starter Size 1, FVNR	1	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-3	Alternator For Air Compressors #1 & #2	Two Circuit Alternator See Specifications	-	See Specs	-	-	-	-	10	14	THW	Control	- 1"
CC2-4	Controls For Unit Heaters	Control Relays Indicating Lights	-	-	-	-	-	-	2	14	THW	Control	- 3/4"
CC2-5	Lights-Operating Floor	Combination Contactor 30A, 5 Pole, FVNR	-	-	-	-	-	-	-	-	-	-	-
CC2-6	Light-Pump Wall	Combination Contactor 30A, 5 Pole, FVNR	-	k, l	-	-	-	-	-	-	-	-	-
CC2-7a	45KVA Transformer Blank (Spare)	Circuit Breaker	-	-	F	3	70	2	4	6	THW	Power	10 1 1/2"
CC2-7b	Combination Starter Size 4, FVNR (Add.#1)	Circuit Breaker	50	a,b,c,d,f	J	3	150	6	3	2	THW	Power	8 2" (Add.#1)
CC2-8	Panelboard "LB" 20BY/20V, 3# 4W	Circuit Breaker Panelboard See Specifications	-	See Specs	-	-	-	-	4	1/2	THW	Power	6 2"
CC2-9	Unit Heater #2	Combination Contactor Size 1, FVNR	5	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-10	Unit Heater #2	Combination Contactor Size 1, FVNR	5	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-11	Unit Heater #4	Combination Contactor Size 1, FVNR	15	a,b,c,d,f	F	3	20	4	3	12	THW	Power Control	14 1"
CC2-12	Unit Heater #6	Combination Contactor Size 1, FVNR	5	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-13	Blank (Spare)	Combination Starter Size 1, FVNR	5	a,b,c,d,f	F	3	15	4	-	-	-	-	-
CC2-14	Exhaust Fan #3	Combination Starter Size 1, FVNR	1	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-15	Exhaust Fan #1	Combination Starter Size 1, FVNR	1	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-16	Screen #2	Combination Starter Size 1, FVNR	3	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-17	Grinder #2	Combination Starter Size 2, FVNR	15	a,b,c,d,f	F	3	40	4	3	10	THW	Power Control	12 1"
CC2-18	Air Compressor #2	Combination Starter Size 1, FVNR	1/2	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-19	Collector Drive #2	Combination Starter Size 1, FVNR	1	a,b,c,d,f	F	3	15	4	3/2	12	RHW-USE RHW-USE	Power Control	12 See Dwgs.
CC2-20	Spray Water Pump #2	Combination Starter Size 1, FVNR	2	a,b,c,d,f	F	3	20	4	3/2	12	RHW-USE RHW-USE	Power Control	12 See Dwgs.
CC2-21	Spray Water Pump #4	Combination Starter Size 1, FVNR	5	a,b,c,d,f	F	3	20	4	3/2	12	RHW-USE RHW-USE	Power Control	12 See Dwgs.
CC2-22	Standard Nameplates	Ammeter, C.T.'s & Switch Voltmeter, RT's & Switch	-	-	-	-	-	-	-	-	-	-	-
CC2-23	Main Breaker Feeder #1	Power Circuit Breaker Stationary Mounting	-	See Specs	600	3	600	-	2(3)	500 MCM	RHW USE	Power	2(1/2) See Dwgs.
CC2-24	-	Incoming Service Feeders	-	-	-	-	-	-	2(3)	500 MCM	RHW USE	Power	2(1/2) See Dwgs.
CC2-25	See Drawing #2G	Annunciator 20 Circuits	-	-	-	-	-	-	Sec Dwgs.	14	THW	Alarm	- See Dwgs.
CC2-26	Tie Breaker	Power Circuit Breaker Draw-Out Type	-	See Specs	600	3	600	-	-	-	-	-	-
CC2-27	-	Space & Bus	-	-	-	-	-	-	-	-	-	-	-
CC2-28	Standard Nameplates	Ammeter, C.T.'s & Switch Voltmeter, RT's & Switch	-	-	-	-	-	-	-	-	-	-	-
CC2-29	Main Breaker Feeder #1	Power Circuit Breaker Draw-Out Type	-	See Specs	600	3	600	-	2(3)	500 MCM	RHW USE	Power	2(1/2) See Dwgs.
CC2-30	-	Incoming Service Feeders	-	-	-	-	-	-	2(3)	500 MCM	RHW USE	Power	2(1/2) See Dwgs.

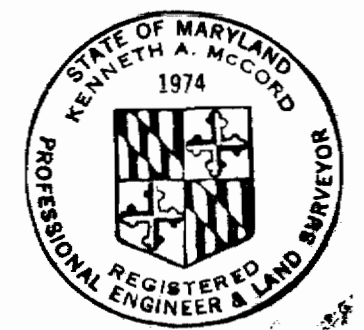
(See Add. #2)

MOTOR CONTROL CENTER SCHEDULE "CC2" (480V)													
Unit # Run Number	NAMEPLATE DATA	DEVICE DESCRIPTION	HP or KVA	Aux. Descr.	BREAKER				WIRE			Ground Wire Size	Conduit
					Frame	Poles	Calib.	A.I.C.	No.	Size	Type		
CC2-31	Screen #1	Combination Starter Size 1, FVNR	1	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-32	Grinder #1	Combination Starter Size 2, FVNR	15	a,b,c,d,f	F	3	40	4	3	10	THW	Power Control	12 1"
CC2-33	Air Compressor #1	Combination Starter Size 1, FVNR	1/2	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-34	Blank (Spare)	Space & Bus For Size 1, FVNR	-	-	-	-	-	-	-	-	-	-	-
CC2-35	Spray Water Pump #1	Combination Starter Size 1, FVNR	2	a,b,c,d,f	F	3	20	4	3/2	12	RHW-USE RHW-USE	Power Control	12 See Dwgs.
CC2-36	Spray Water Pump #3	Combination Starter Size 1, FVNR	5	a,b,c,d,f	F	3	20	4	3/2	12	RHW-USE RHW-USE	Power Control	12 See Dwgs.
CC2-37	Unit Heater #1	Combination Contactor Size 1, FVNR	5	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-38	Unit Heater #3	Combination Contactor Size 1, FVNR	15	a,b,c,d,f	F	3	20	4	3	10	THW	Power Control	12 1"
CC2-39	Unit Heater #5	Combination Contactor Size 1, FVNR	5	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-40	Cooling Fan #1	Combination Starter Size 1, FVNR	7 1/2	a,b,c,d,f	F	3	20	4	3	12	THW	Power Control	14 1"
CC2-41	Blank (Spare)	Space & Bus For Size 1, FVNR	-	-	-	-	-	-	-	-	-	-	-
CC2-42	Screen Room Fan	Combination Starter Size 1, FVNR	1/2	a,b,c,d,f	F	3	15	4	3	12	THW	Power Control	14 1"
CC2-43	Collector Drive #1	Combination Starter Size 1, FVNR	1/2	a,b,c,d,f	F	3	15	4	3/2	12	RHW-USE RHW-USE	Power Control	12 See Dwgs.
CC2-44	Sewage Pump #1	Combination Starter Size 4, FVNR (Add.#1)	50	a,b,c,d,f	J	3	150	6	3	2	THW	Power	8 2" (Add.#1)
CC2-45	Blower #1	Combination Starter Size 4, FVNR	100	a,b,c,d,f	L (Add.#2)	3	250 (Add.#3)	7 (Add.#4)	3	1/2	THW	Power	2 3/4"
CC2-46	Collector Drive #3 (Fut.)	Fut. Combination Starter Size 1, FVNR	1	a,b,c,d,f	F	3	15	4	-	-	-	-	-
CC2-47a	Blank (Spare)	Circuit Breaker	-	-	F	3	20	4	-	-	-	-	-
CC2-47b	Blank (Spare)	Circuit Breaker	-	-	F	3	15	4	-	-	-	-	-
CC2-48	Blank (Spare)	Combination Starter Size 1, FVNR	5	a,b,c,d,f	F	3	15	4	-	-	-	-	-
CC2-49	Blank (Spare)	Combination Starter Size 1, FVNR	1/2	a,b,c,d,f	F	3	15	4	-	-	-	-	-
CC2-50	Sewage Pump #3 (Fut.)	Fut. Combination Starter Size 4, FVNR (Add.#1)	50	a,b,c,d,f	J	3	150	6	-	-	-	-	2" (Add.#1)
CC2-51	Controls For Sewage Pumps	See Specifications	-	-	-	-	-	-	16	12	THW	Control	- See Dwgs.
CC2-52	Sewage Pump #1 Secondary Controls	See Specifications	-	-	-	-	-	-	3	2	THW	Power	- 2"
CC2-53	Sewage Pump #2 Secondary Controls	See Specifications	-	-	-	-	-	-	3	2	THW	Power	- 2"

- AUXILIARY DESCRIPTION FOR MOTOR CONTROL CENTER "CC2"
- a - Red & green indicating lights
 - b - Hand-Off-Automatic selector switch
 - c - Third overload relay
 - d - 480-120 volt control transformer
 - e - Start-stop pushbutton station
 - f - Running time meters
 - g - Fast-slow pushbutton station (mechanically interlocked)
 - h - Tachometer
 - k - On-off pushbutton station
 - l - Red indicating light

- CIRCUIT BREAKER A.I.C. LEGEND
- 2 - 10,000 Amperes at 120/240 Volts
 - 3 - 15,000 Amperes at 480 Volts
 - 4 - 15,000 Amperes at 600 Volts
 - 5 - 20,000 Amperes at 480 Volts
 - 6 - 25,000 Amperes at 480 Volts
 - 7 - 30,000 Amperes at 480 Volts
 - 8 - 35,000 Amperes at 480 Volts

NOTES
1. For General Electrical Notes & Electrical Legend, see drawing #26.



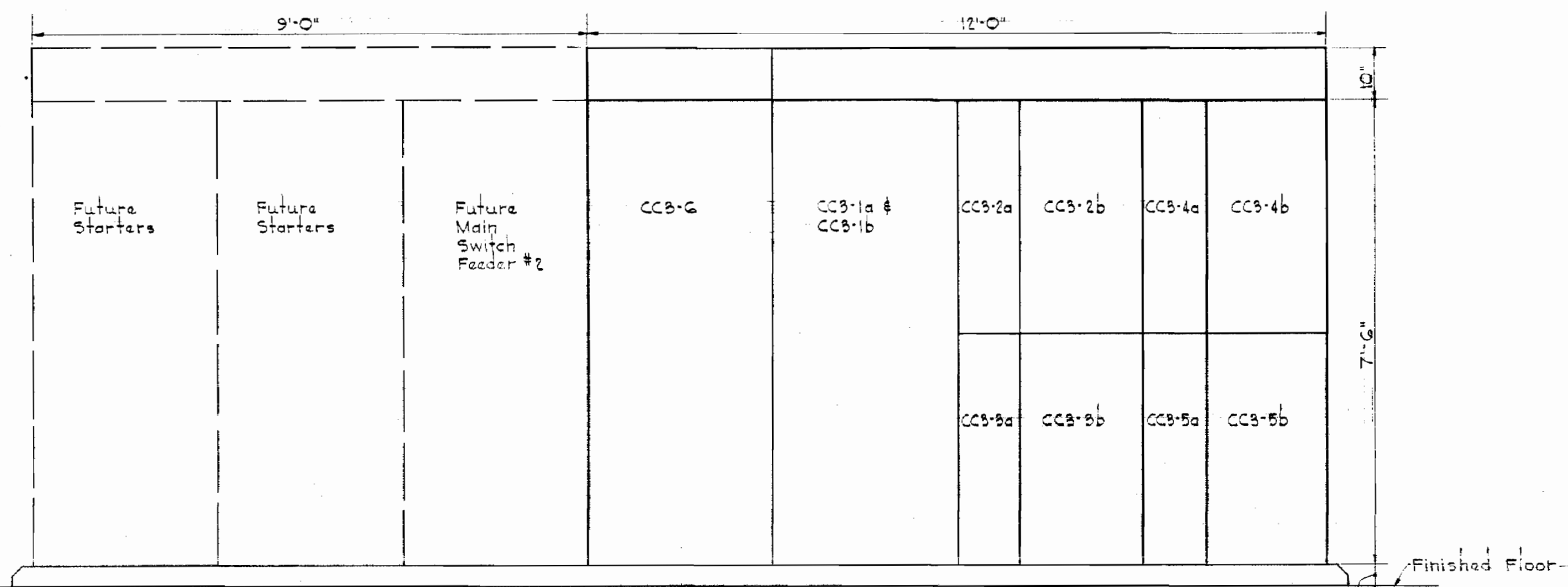
Kenneth A. McLeod

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS 4-11-69 <i>WOF</i> DATE CHIEF ENGINEER	CONTRACT NO. 237-3 ELECTRICAL MOTOR CONTROL CENTER - CC 2 SCHEDULE & DETAILS	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1 DRAWING NO. 29 OF 33 SCALE AS SHOWN
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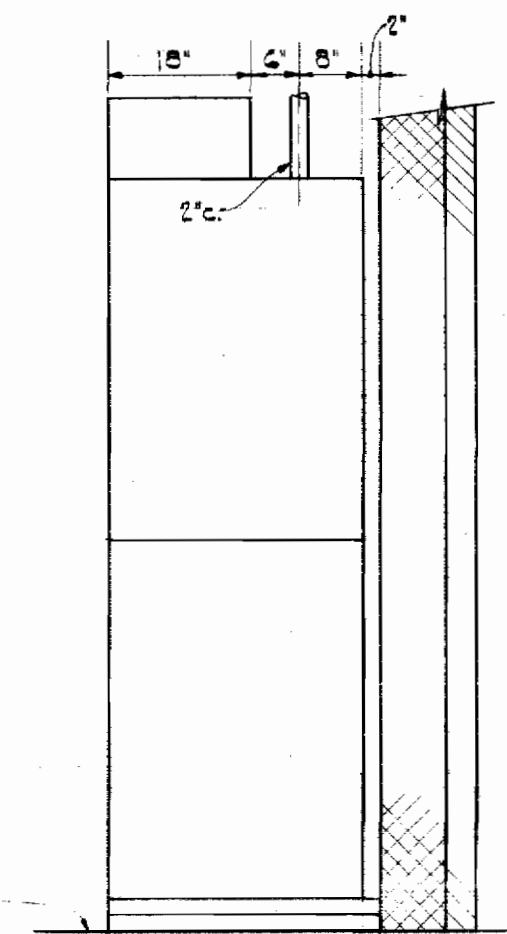
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AS BUILT 3/2/72

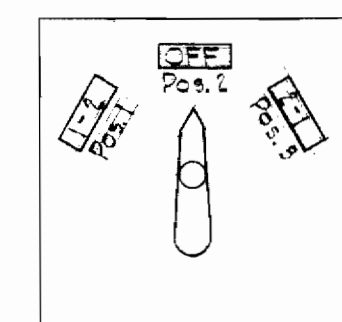
WS 237-S/29



FRONT ELEVATION-MOTOR CONTROL CENTER "CC3"
Scale: 1/2" = 1'-0"



END ELEVATION - "CC3"
Scale: 1/2" = 1'-0"



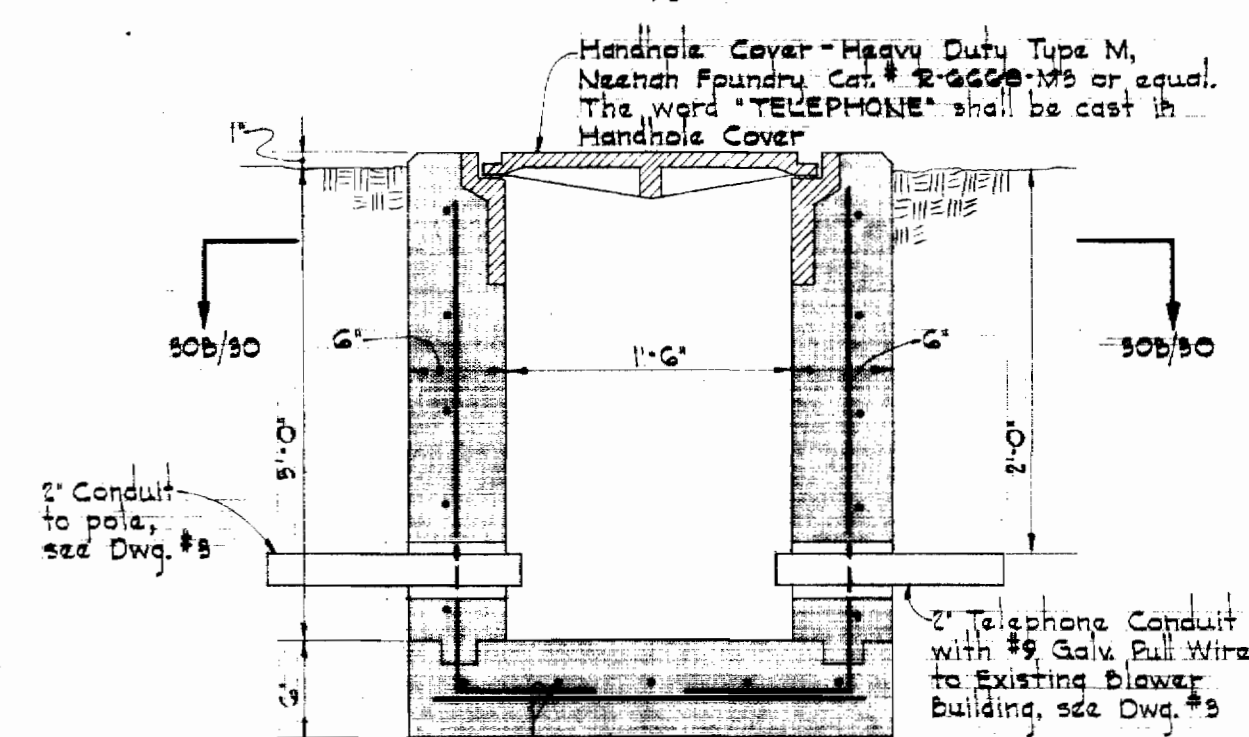
CONTACTS	POSITIONS				
	1	2	3	4	5
1 - I	X				
2 - II					
3 - III				X	
4 - IV		X			
5 - V					X
6 - VI					X

X = Contacts closed

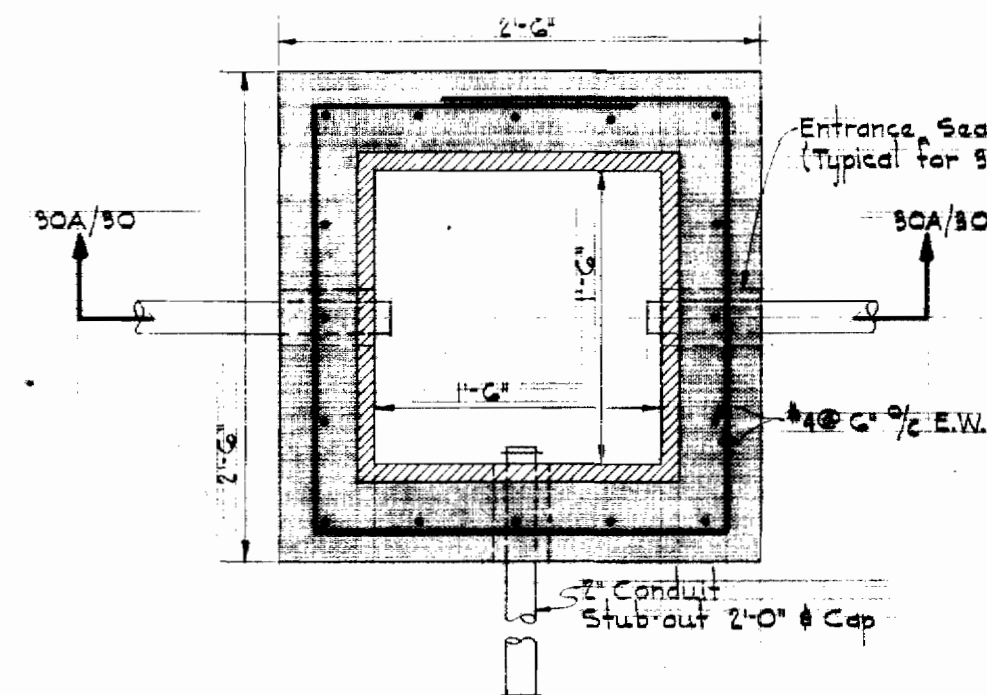
POSITIONS	PUMP SEQUENCE
No. 1	1 - 2
No. 2	OFF
No. 3	2 - 1

LEAD PUMP SELECTOR SWITCH "S1"
FOR SEWAGE PUMPS No. 1 & 2
No Scale

MOTOR CONTROL CENTER SCHEDULE "CC3" (2400V)														
Unit & Run Number	NAMEPLATE DATA	DEVICE DESCRIPTION	HP Per KVA	Aux. Descr.	SWITCH		FUSE		WIRE				Ground Wire Size	Conduit
					Frame	Poles	Rating	Type	No.	Size	Type	For		
CC3-1a	Main Switch Feeder #1	Interrupter Switch Single-throw, gang operated 5KV Rated, GO BIL	-	See Spec.	GOOA	3	400E	Current Limiting	3/4	250 MCM	5KV	Power	4	See Dwg.
CC3-1b	Main Switch Feeder #1	Ammeter, Switch, CT's, etc. Voltmeter, Switch, PT's, etc.	-	See Spec.	-	-	-	-	By	Manufacturer	-	-	-	-
CC3-2a	Blower #2	Combination Controller 300 HP Size, FVNR	200	a, c, d, f, h	-	-	4X	Current Limiting	3	2	5KV	Power	3	2"
CC3-2b	Blower #2	CFM Meter, CT's, etc. Timers, Control Relays	-	See Spec.	-	-	-	-	By	Manufacturer	-	-	-	-
CC3-3a	Blower #4 (Fut)	Space & Bus for Future Combination Controller 300 HP Size, FVNR	300	a, c, d, f, h	-	-	-	-	-	-	-	-	-	-
CC3-3b	Blower #4 (Fut)	Space for Future Blower Control Devices	-	-	-	-	-	-	-	-	-	-	-	-
CC3-4a	Blower #5	Combination Controller 300 HP Size, FVNR	200	a, c, d, f, h	-	-	4X	Current Limiting	3	2	5KV	Power	3	2"
CC3-4b	Blower #5	CFM Meter, CT's, etc. Timers, Control Relays	-	See Spec.	-	-	-	-	By	Manufacturer	-	-	-	-
CC3-5a	Blank (Fut)	Space & Bus for Future Combination Controller 300 HP Size, FVNR	300	-	-	-	-	-	-	-	-	-	-	-
CC3-5b	Blank (Fut)	Space for Future Blower Control Devices	-	-	-	-	-	-	-	-	-	-	-	-
CC3-6	Tie Switch	Interrupter Switch Single-throw, gang operated 5KV Rated, GO BIL	-	See Spec.	GOOA	3	400E	Current Limiting	-	-	-	-	-	-

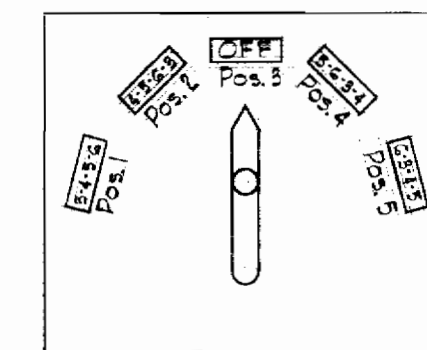


SECTION 30A/30
Scale: 1" = 1'-0"



SECTION 30B/30
Scale: 1" = 1'-0"

TELEPHONE HANDHOLE
Scale: As Shown



CONTACTS	POSITIONS				
	1	2	3	4	5
1 - I	X				
2 - II		X			
3 - III				X	
4 - IV					X
5 - V	X				
6 - VI		X			
7 - VII					X
8 - VIII	X				
9 - IX		X			
10 - X			X		
11 - XI				X	
12 - XII					X
13 - XIII	X				
14 - XIV		X			
15 - XV			X		
16 - XVI				X	

X = Contacts closed

POSITIONS	PUMP SEQUENCE
No. 1	3 - 4 - 5 - 6
No. 2	4 - 5 - 6 - 3
No. 3	OFF
No. 4	5 - 6 - 3 - 4
No. 5	6 - 3 - 4 - 5

LEAD PUMP SELECTOR SWITCH
FOR FUTURE SEWAGE PUMPS No. 3, 4, 5 & 6
No Scale

- AUXILIARY DESCRIPTION FOR MOTOR CONTROL CENTER "CC3"
- a - Red & green indicating lights
 - b - Hand-Off-Automatic selector switch
 - c - Third overload relay
 - d - 240-120 volt control transformer
 - e - Start-stop pushbutton station
 - f - Running time meters
 - g - Fast-slow pushbutton station (mechanically interlocked)
 - h - 240-120 volt control transformer

NOTES

1. For General Electrical Notes & Electrical Legend, see Drawing #16.



Kenneth A. McLeod

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS DATE: 4-14-68 W. O. GOSB CHIEF ENGINEER	CONTRACT NO. 237-S	ELECTRICAL MOTOR CONTROL CENTER - CC 3 SCHEDULE & DETAILS	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1	DRAWING NO. 30 OF 33	SCALE AS SHOWN
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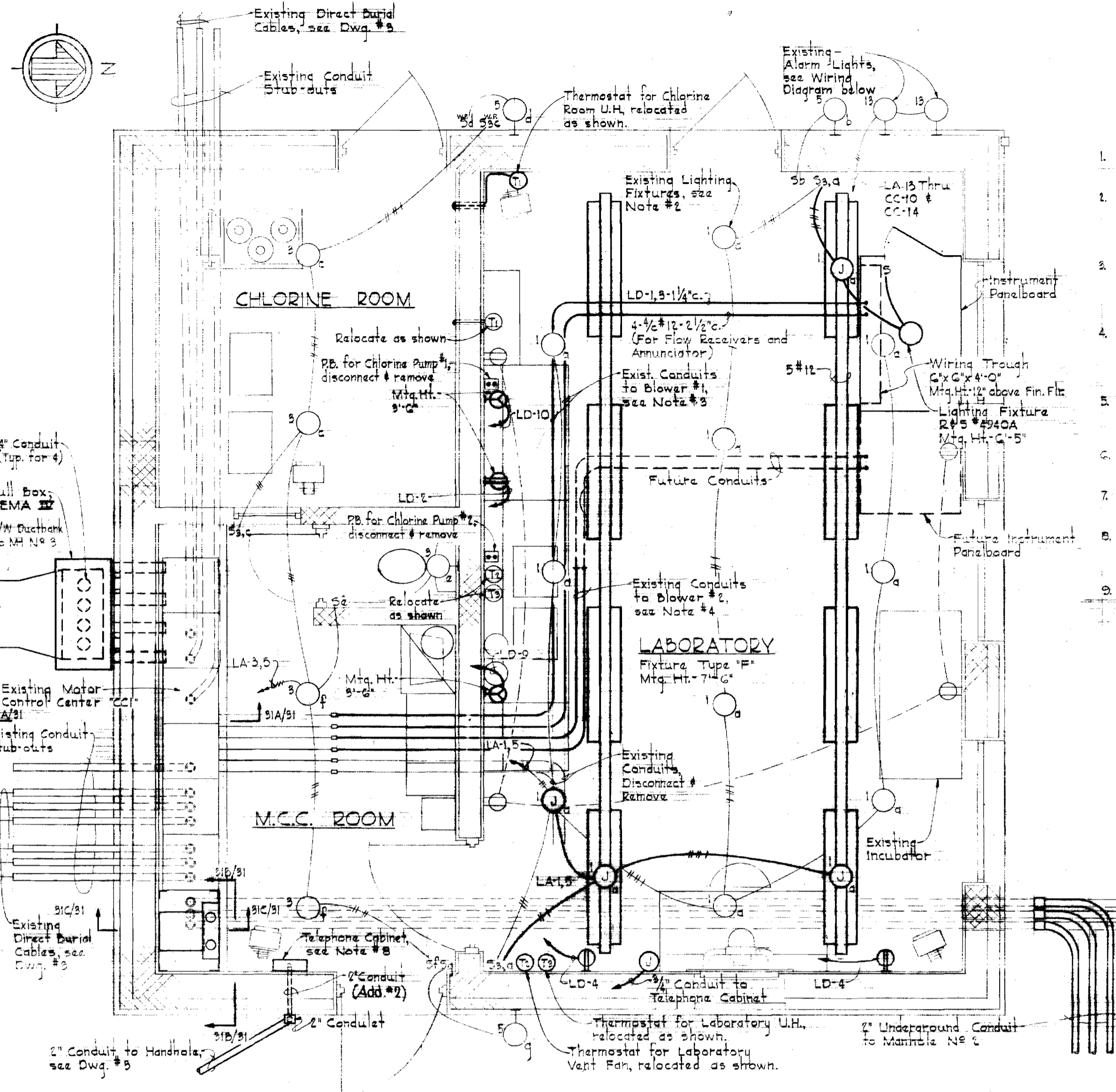
W.O. GOSB

AS BUILT 5/5/72

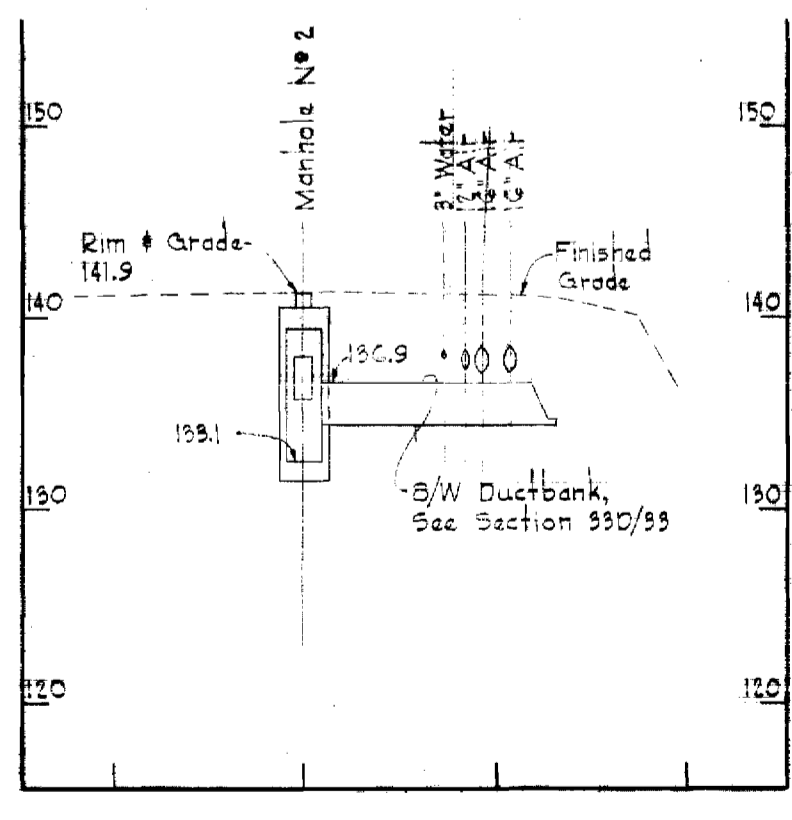
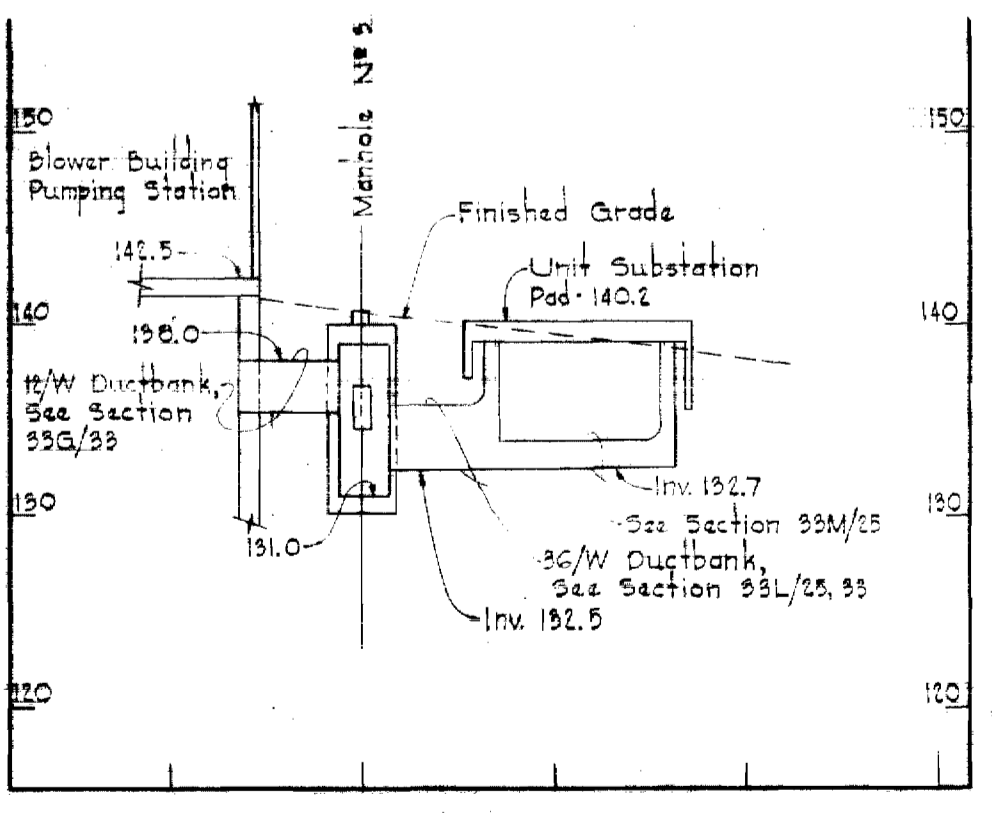
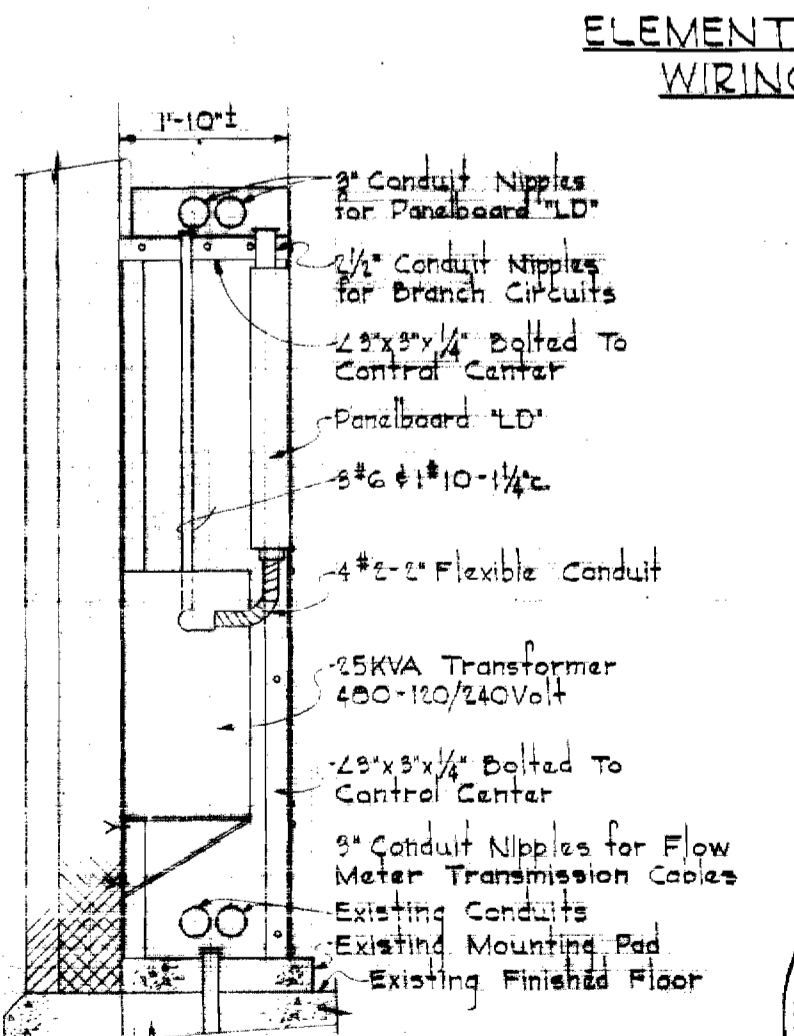
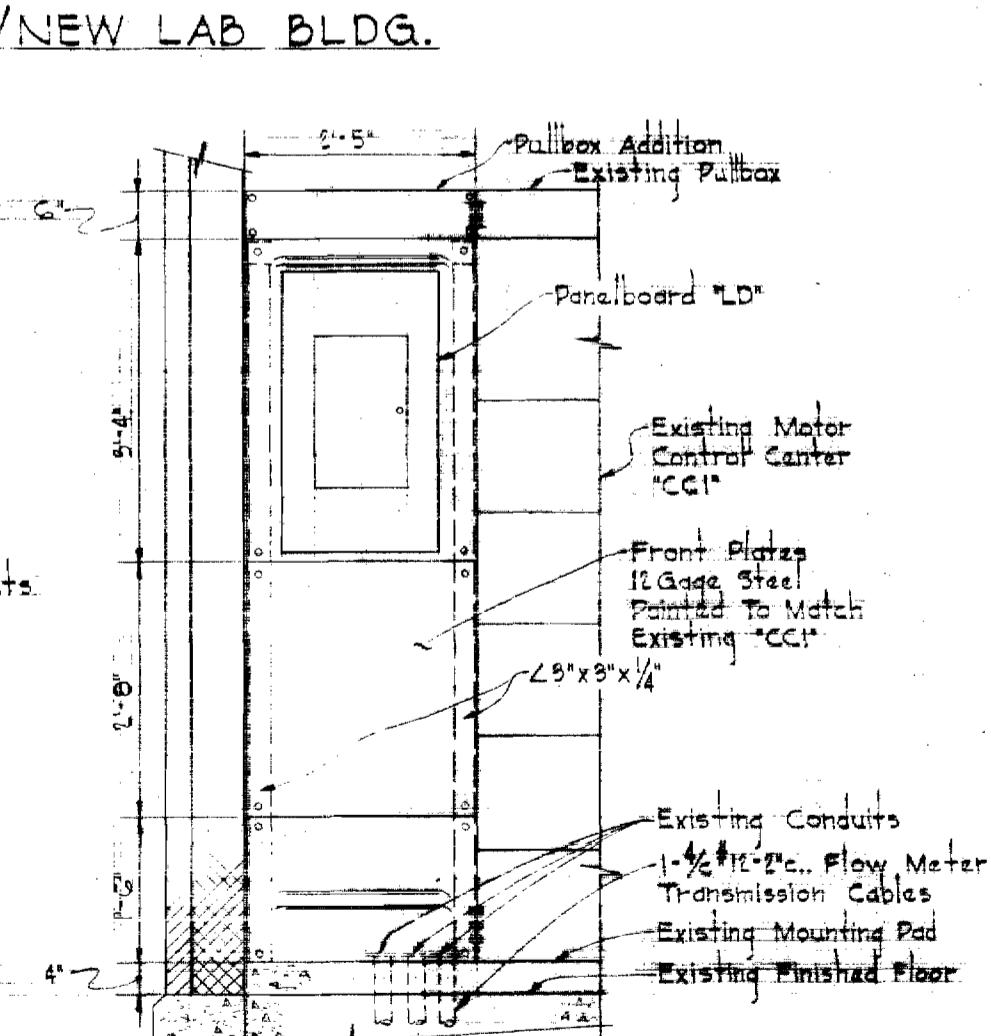
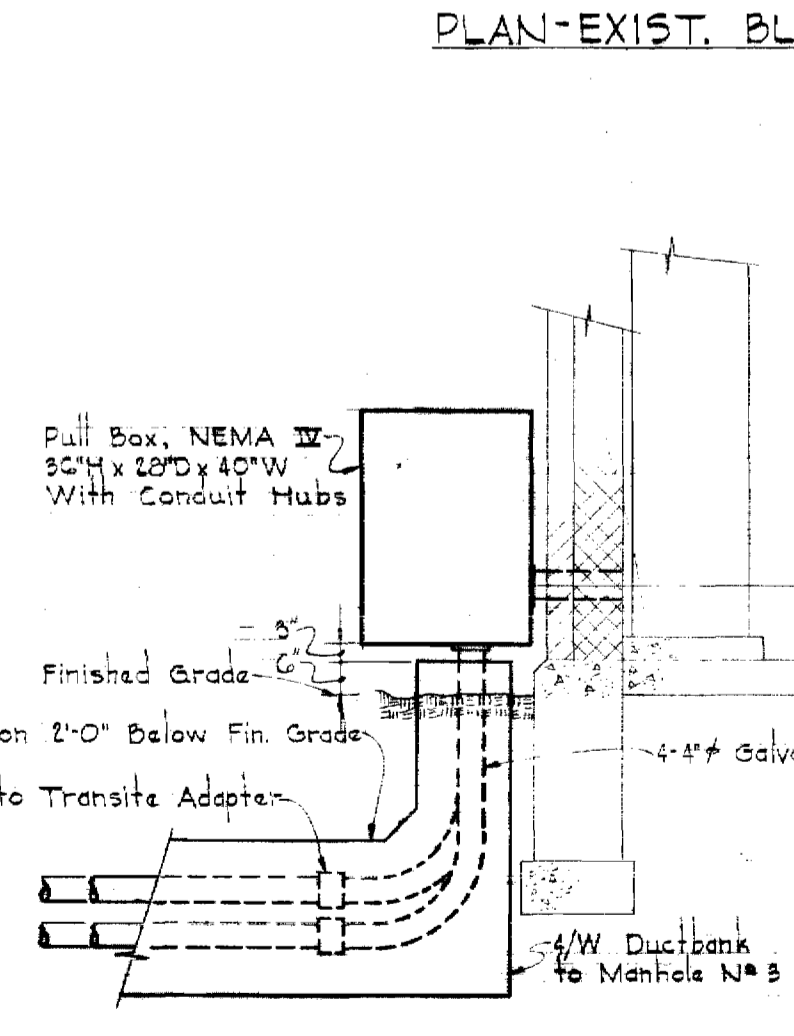
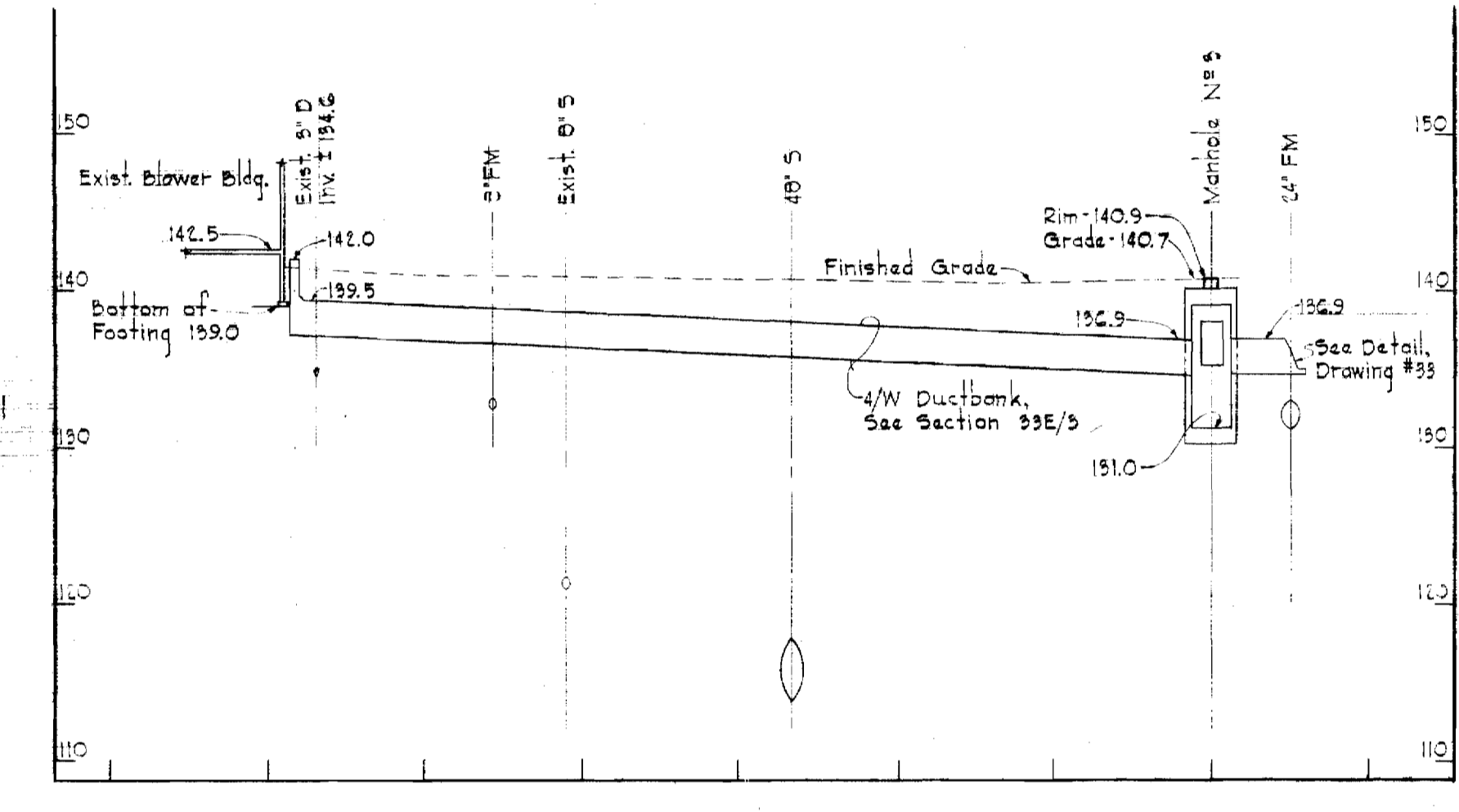
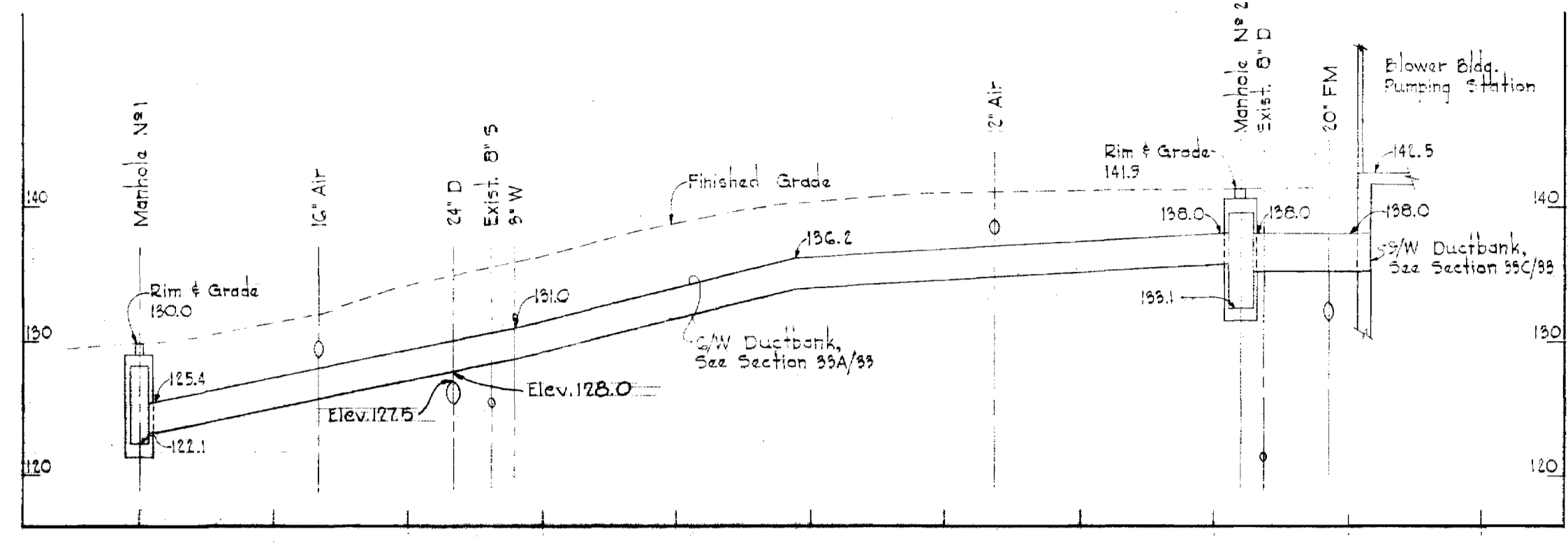
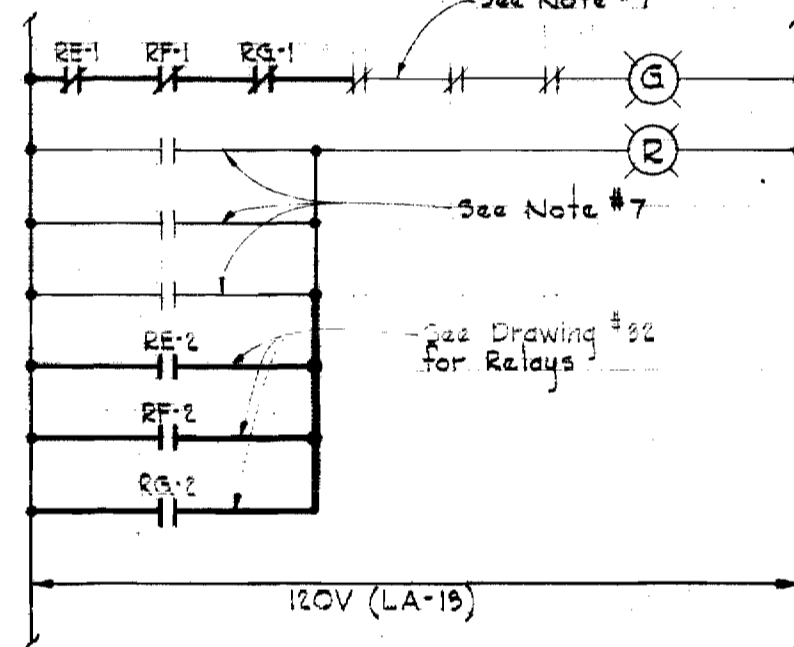
WS 237-S/30

CASPER

CASPER

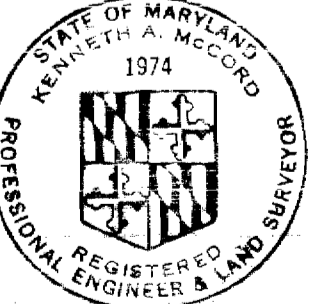


- NOTES**
- For General Electrical Notes & Electrical Legend, see Drawing #26.
 - Existing lighting fixtures and associated conduit and wiring in the Laboratory shall be disconnected and removed. Existing switches "S2" shall be reconnected to control the new lighting fixtures.
 - Existing conduit and wiring to Blower #1 shall be disconnected and revised as shown in the Plan. Existing wiring shall be removed, and the existing conduit shall be extended overhead to the new Instrument Panelboard.
 - Existing conduit and wiring to Blower #2 shall be disconnected and revised as shown in the Plan. Existing wiring shall be removed, and the existing conduits shall be capped.
 - The existing 2(2) underground conduits, which extend out the North side of the Existing Blower Building, shall be extended to Manhole No. 2 as shown on Drawings #3 & #31.
 - In Plan-Exist Blower Bldg./New Lab Bldg., light line work indicates existing, and heavy line work indicates new.
 - In Elementary Control Wiring Diagram, light line work indicates existing, and heavy line work indicates new.
 - Telephone Cabinet shall be Square "D" Company, Cat #1214B (Box); 121GT5 (Front); 121CW (Back); and the top of cabinet shall be 7'-6" above finished floor.
 - The electrical service to the existing hot water heater shall be relocated as directed in the field.



DUCTBANK PROFILES
Scale: Horiz. - 1" = 50'
Vert. - 1" = 10'

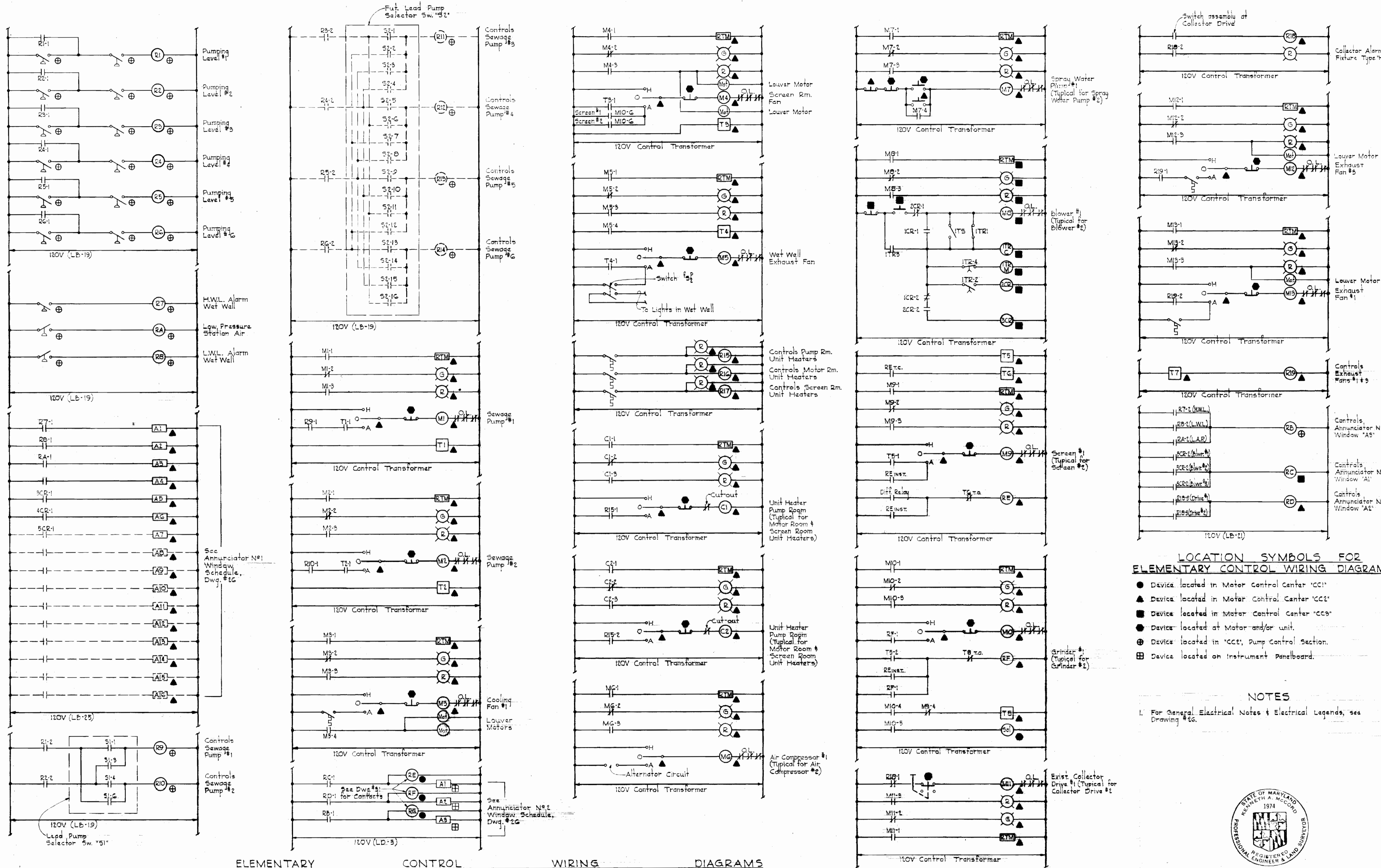
Kenneth A. McLeod



W.D. 6050

AS BUILT 5/5/72

WS 237-S/31

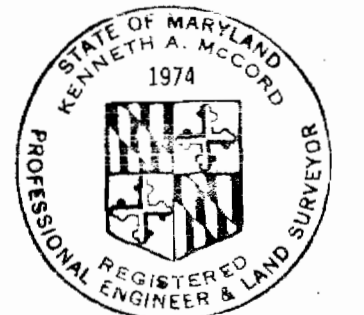


LOCATION SYMBOLS FOR ELEMENTARY CONTROL WIRING DIAGRAMS

- Device located in Motor Control Center 'CC1'
- ▲ Device located in Motor Control Center 'CC2'
- Device located in Motor Control Center 'CC3'
- Device located at Motor and/or unit.
- ⊕ Device located in 'CC2', Pump Control Section.
- ⊞ Device located on Instrument Panelboard.

NOTES

1. For General Electrical Notes & Electrical Legends, see Drawing #16.



Kenneth A. McLeod

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

HOWARD COUNTY DEPT OF PUBLIC WORKS
4-11-69 *W.O. Goso*
DATE CHIEF ENGINEER

CONTRACT NO. 237-S

ELECTRICAL CONTROL WIRING DIAGRAMS

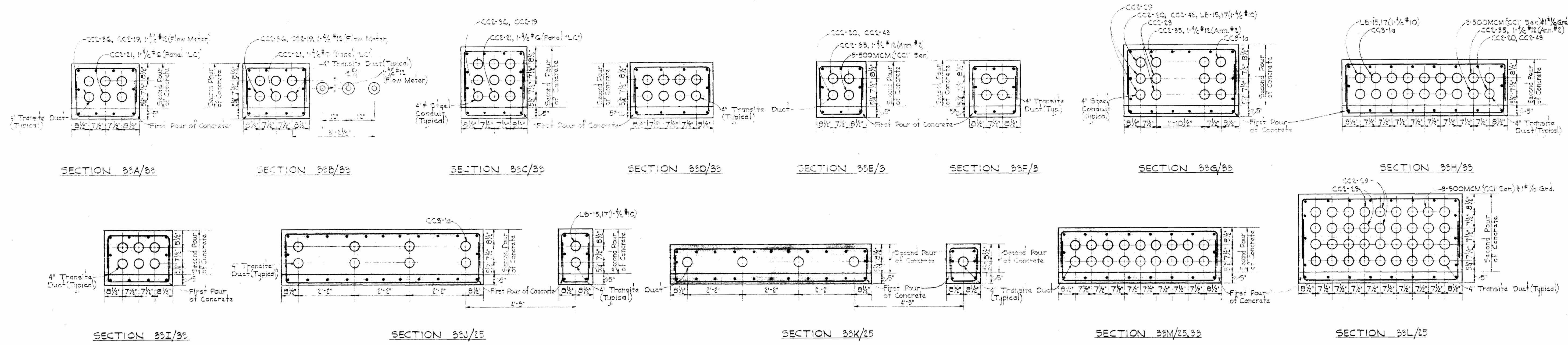
SAVAGE SEWAGE TREATMENT PLANT ADDITION NO. 1

DRAWING NO. 32 OF 33
SCALE AS SHOWN

AS BUILT 5/2/72

WS 237-S/32

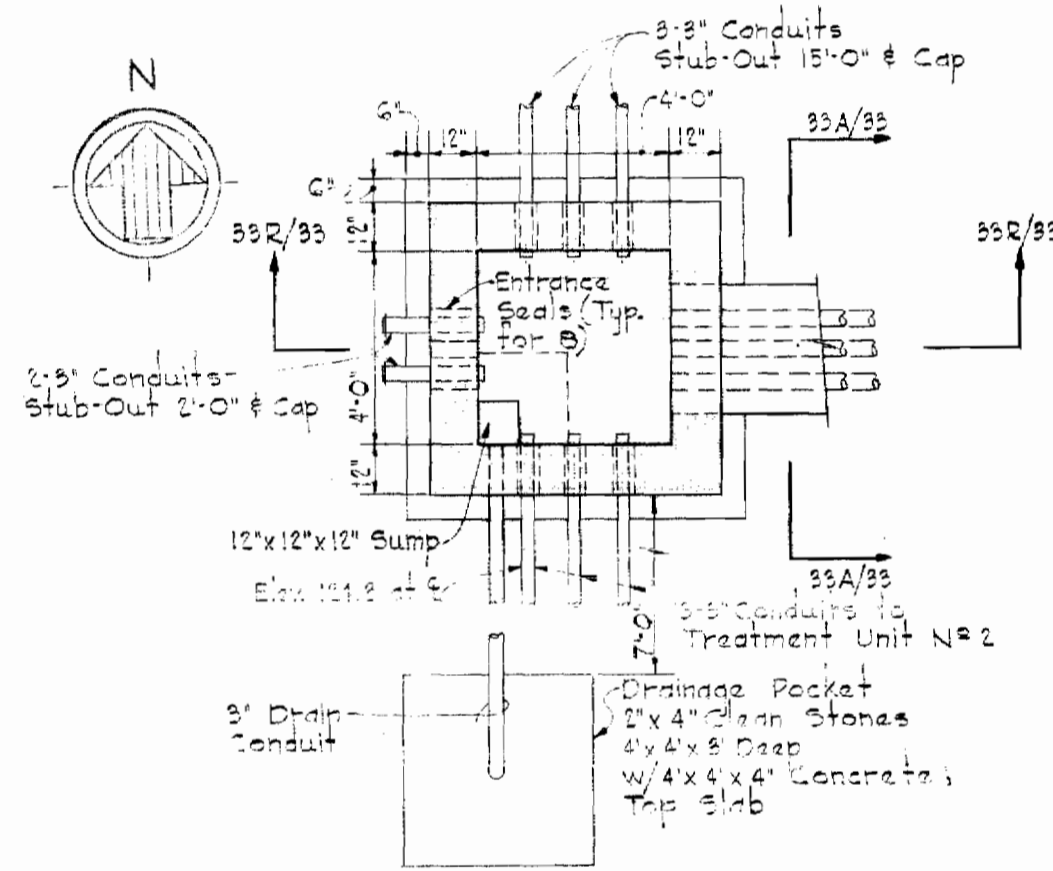
W.O. GOSO



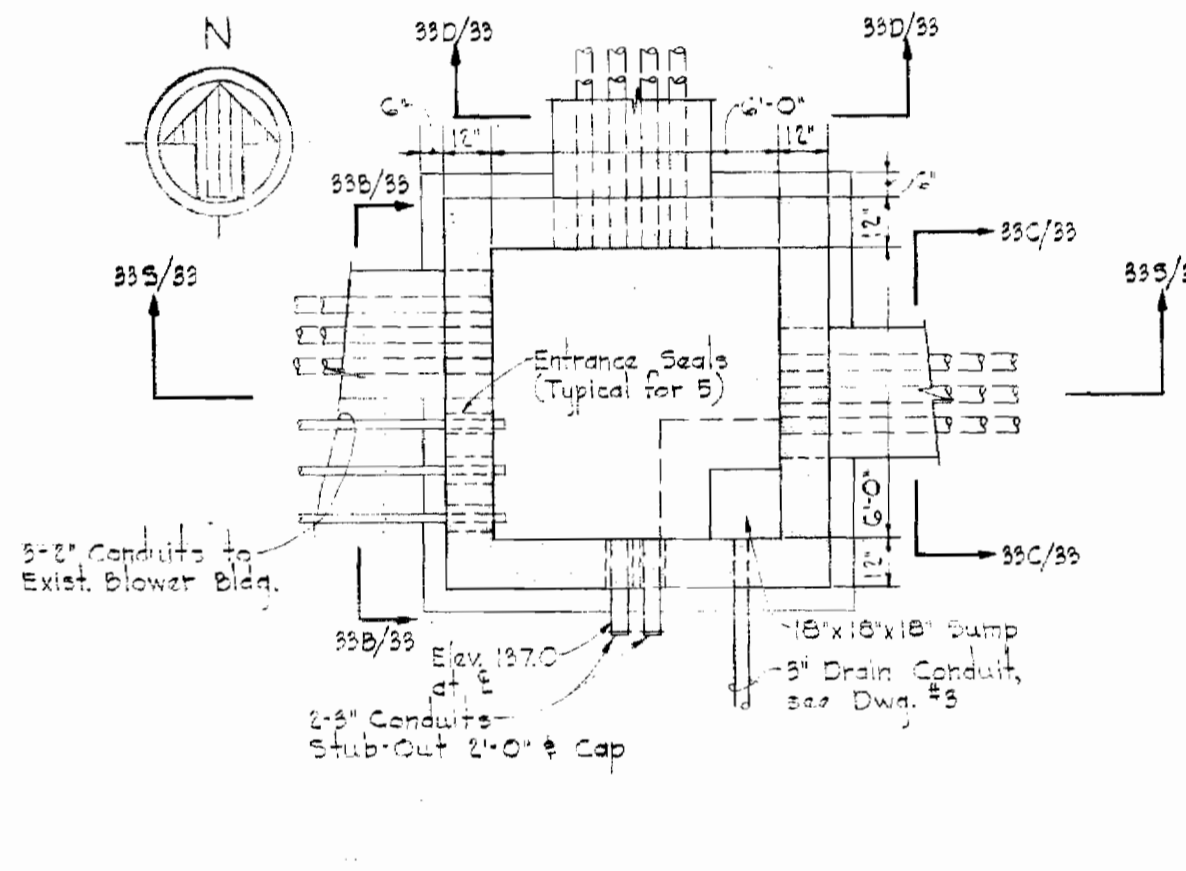
SECTION 33I/33 SECTION 33J/33 SECTION 33K/33 SECTION 33L/33

DUCTBANK SECTIONS

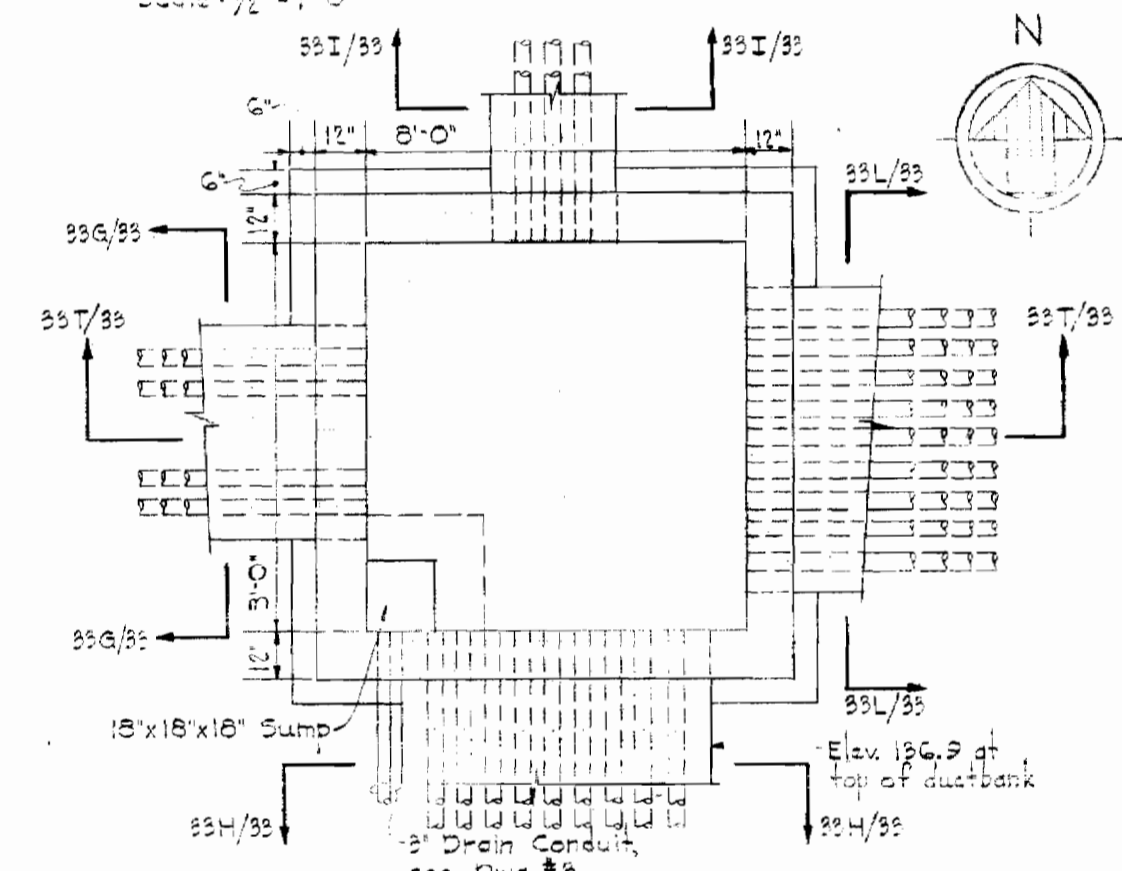
See Section 33I/33 for typical ductbank details
Scale: 1/4" = 1'-0"



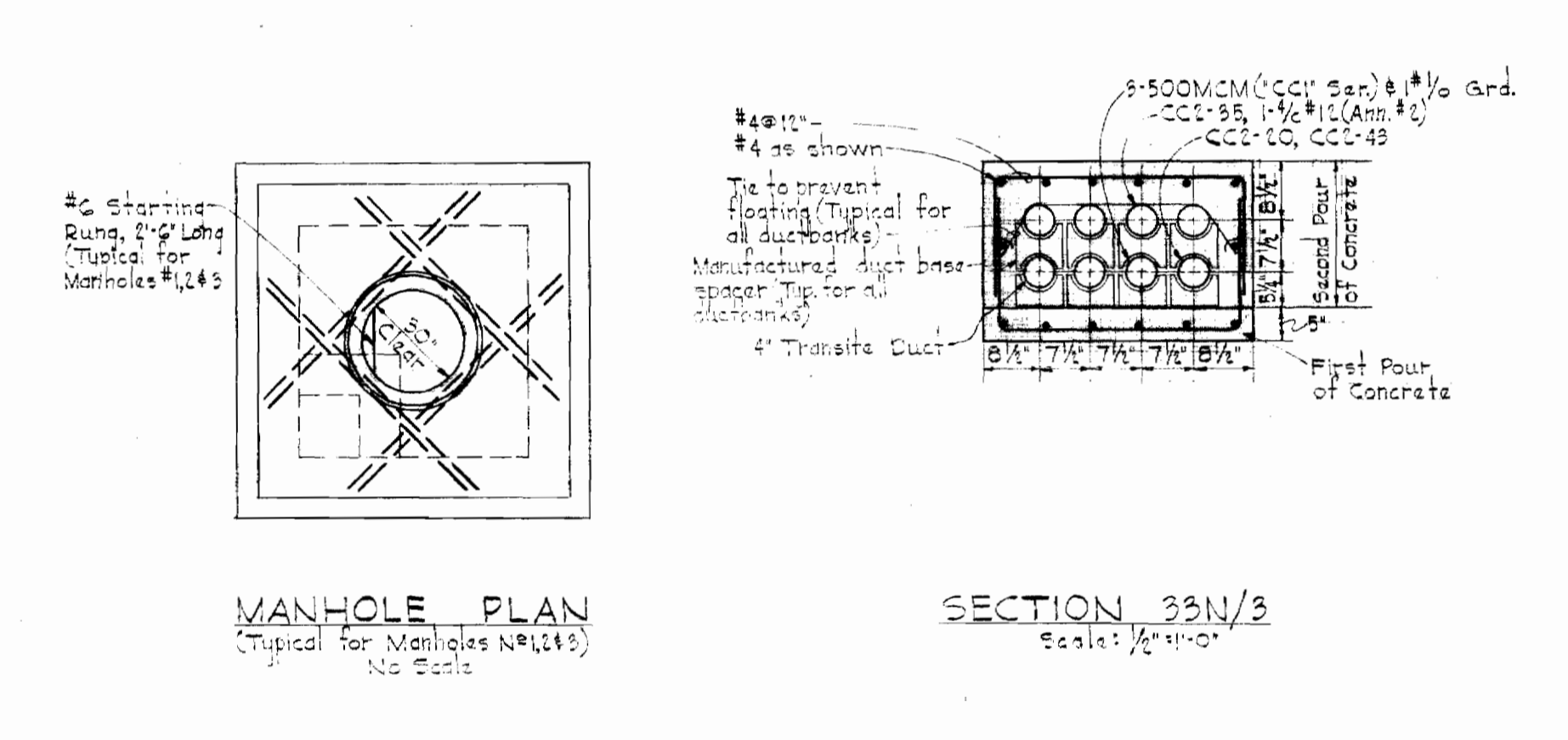
SECTION 33U/33



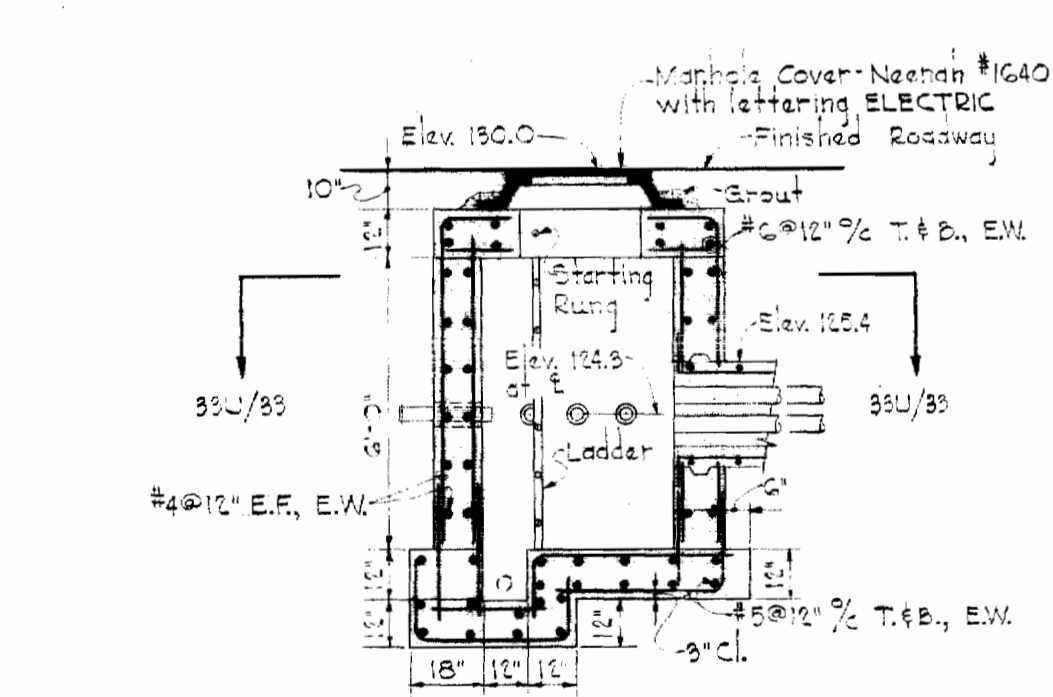
SECTION 33V/33



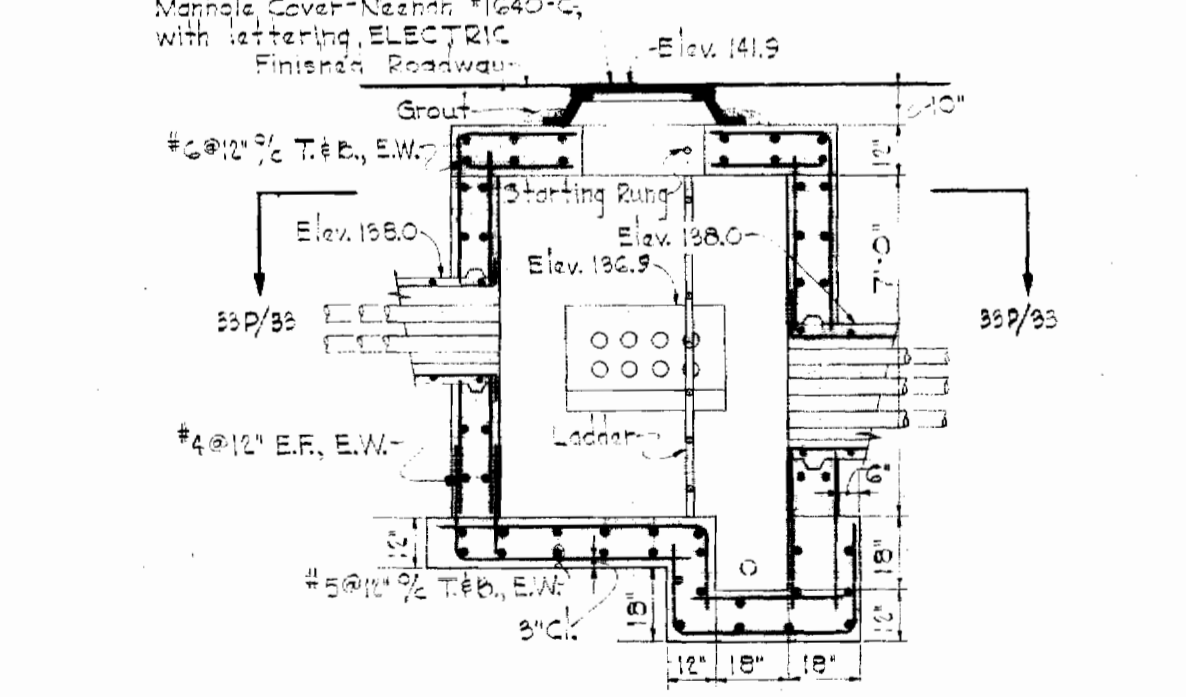
SECTION 33W/33



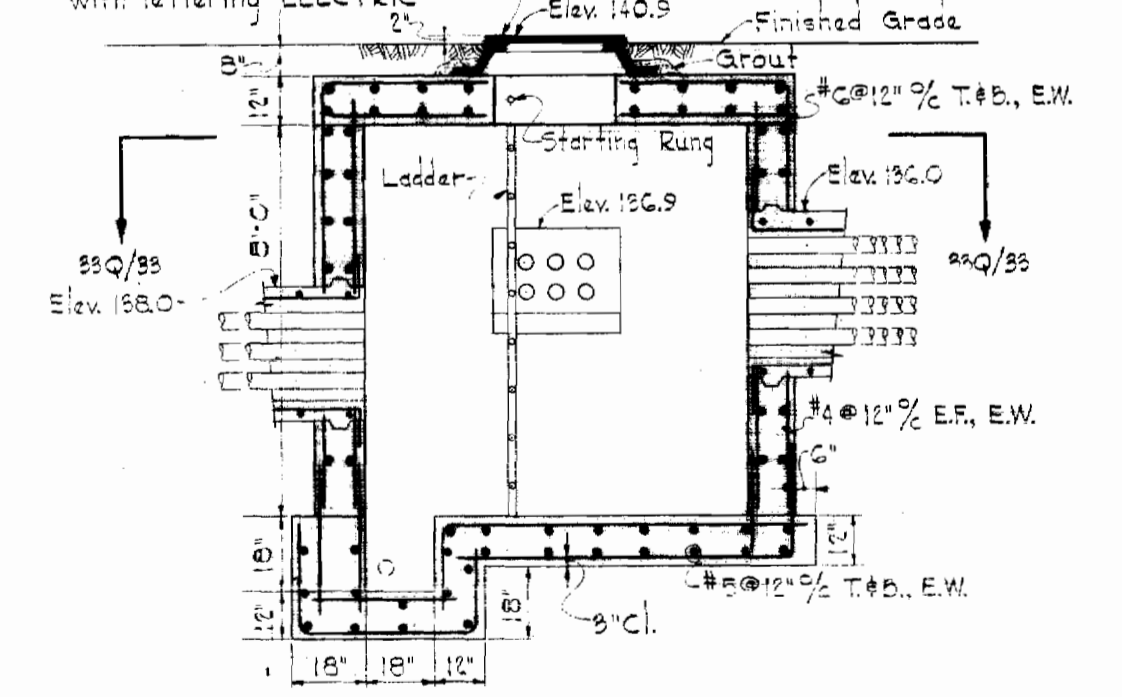
SECTION 33N/33 Scale: 1/4" = 1'-0"



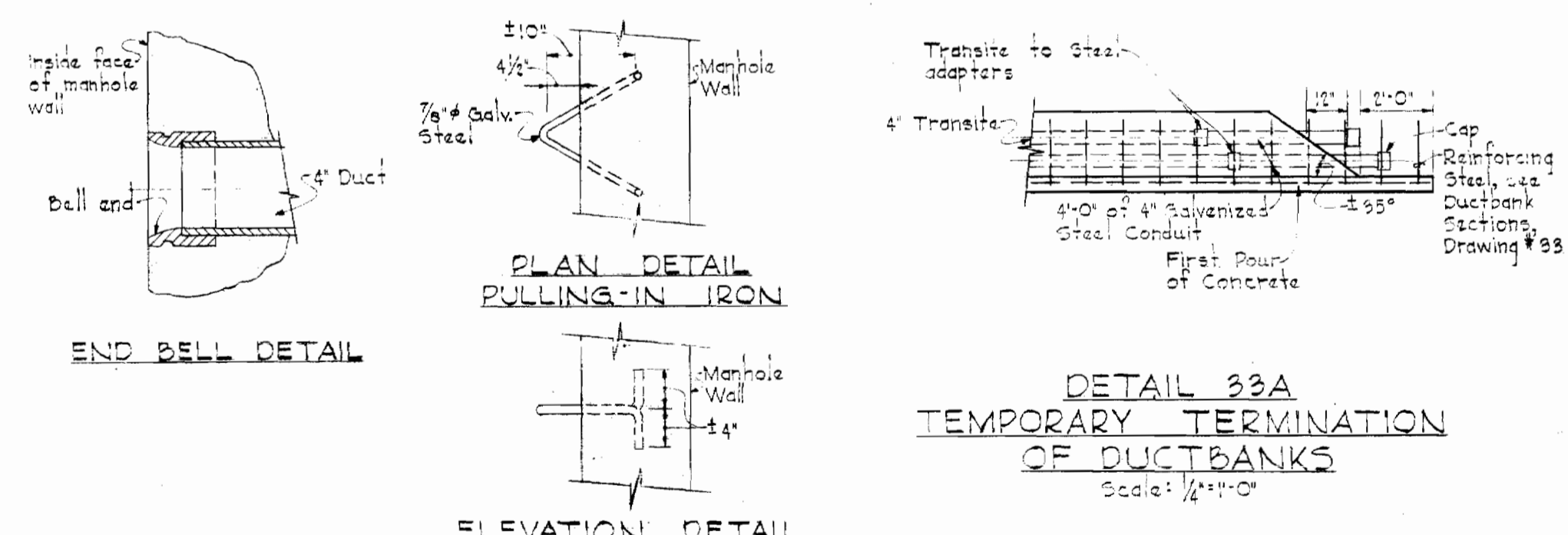
SECTION 33R/33



SECTION 33S/33



SECTION 33T/33



DETAIL 33A TEMPORARY TERMINATION OF DUCTBANKS Scale: 1/4" = 1'-0"

MANHOLE N#1 Scale: 1/4" = 1'-0"

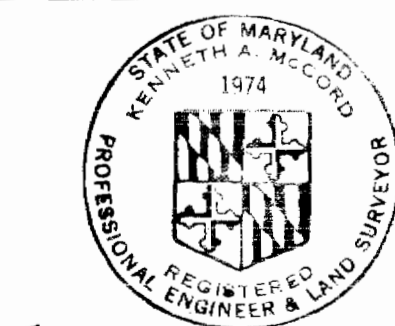
MANHOLE N#2 Scale: 1/4" = 1'-0"

MANHOLE N#3 Scale: 1/4" = 1'-0"

MISCELLANEOUS MANHOLE DETAILS No Scale

NOTES

- For General Electrical Notes & Electrical Legend, see Drawing #26.
- Windows shall be provided in manhole and building walls for underground ductbanks. The ductbanks shall extend into the windows and additional reinforcing steel shall be provided to tie the ductbanks to the respective walls.



Kenneth A. McLeod

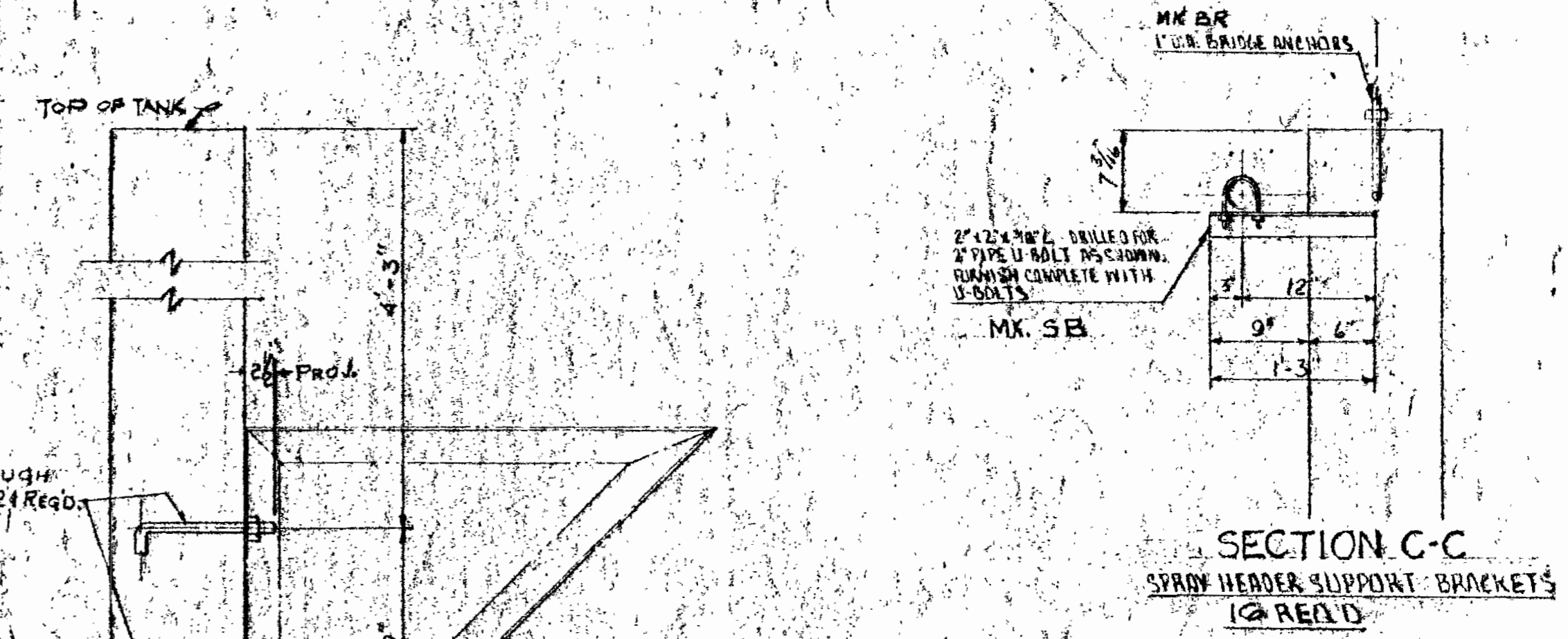
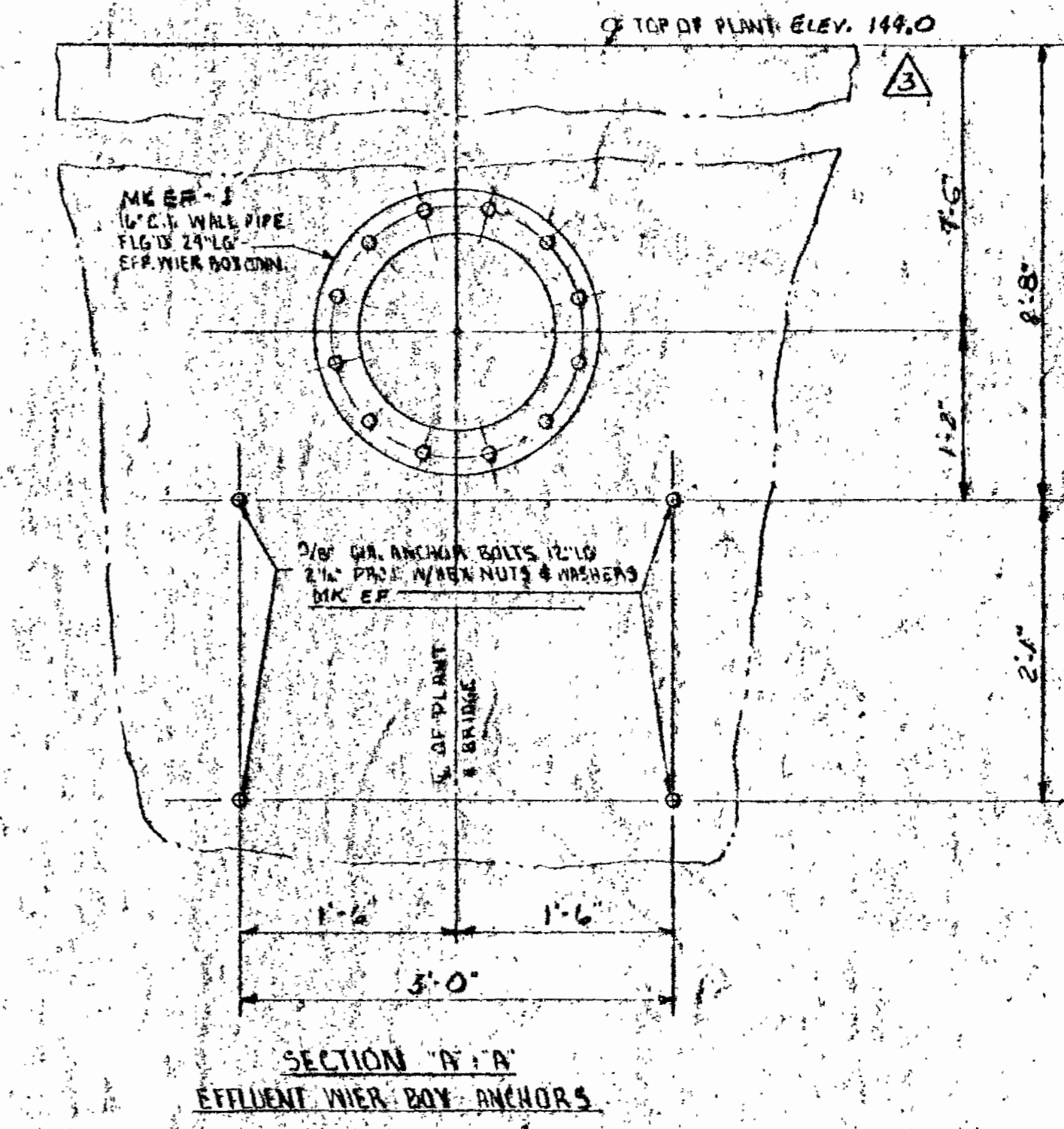
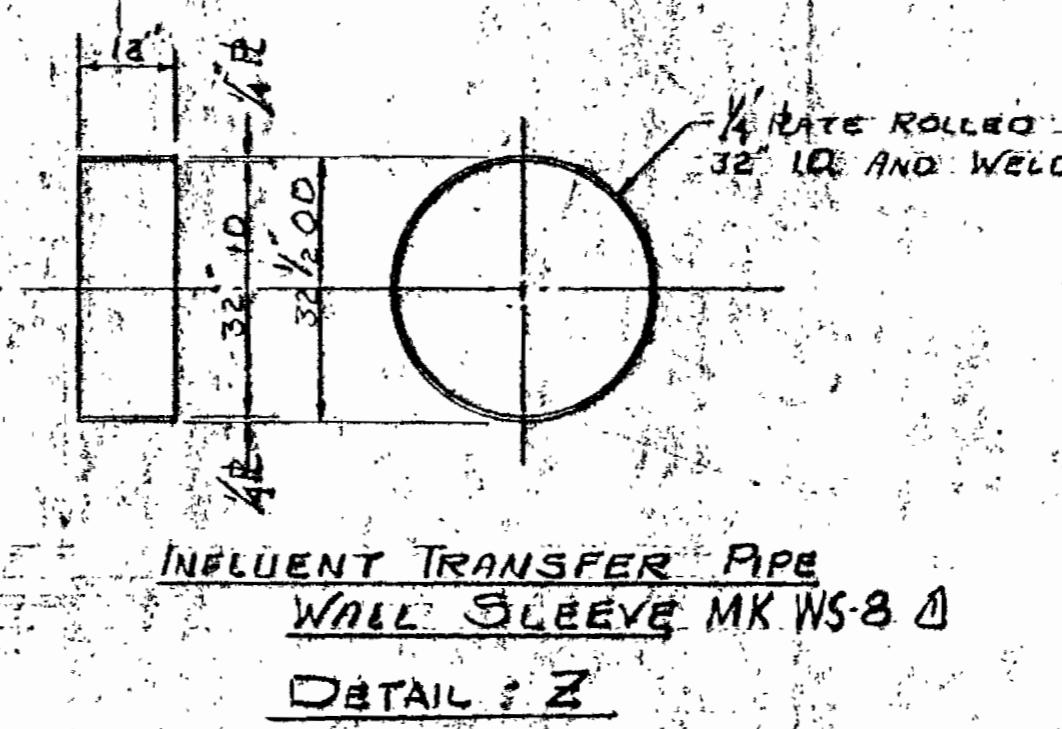
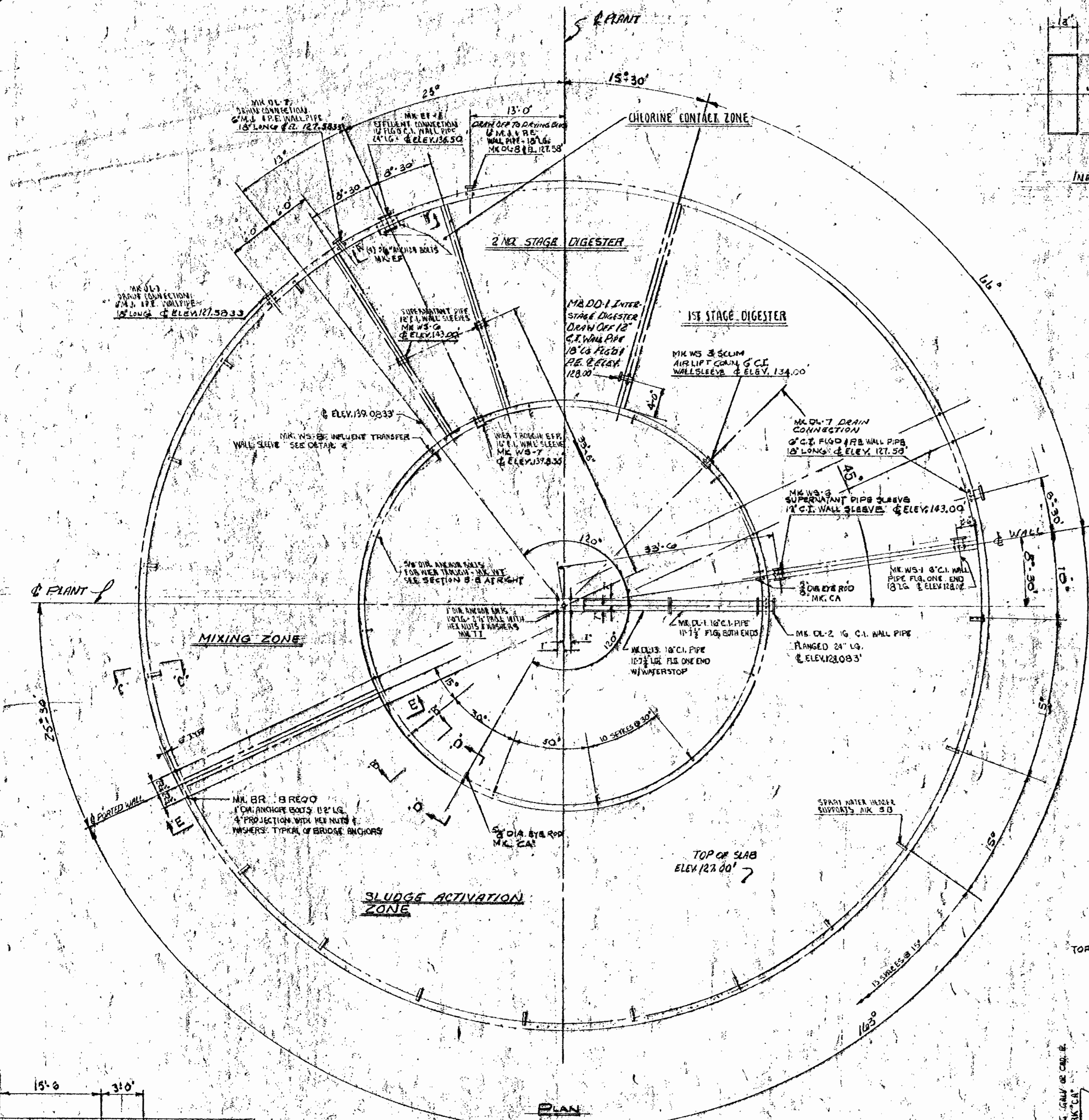
NS 237-S/33

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS DATE: 4-11-69 <i>W.O. Goso</i> CHIEF ENGINEER	CONTRACT NO. 237-S	ELECTRICAL MANHOLE & DUCTBANK DETAILS	SAVAGE SEWAGE TREATMENT PLANT ADDITION NO.1	DRAWING NO. 33 OF 33 SCALE AS SHOWN
--	---	--------------------	--	--	--

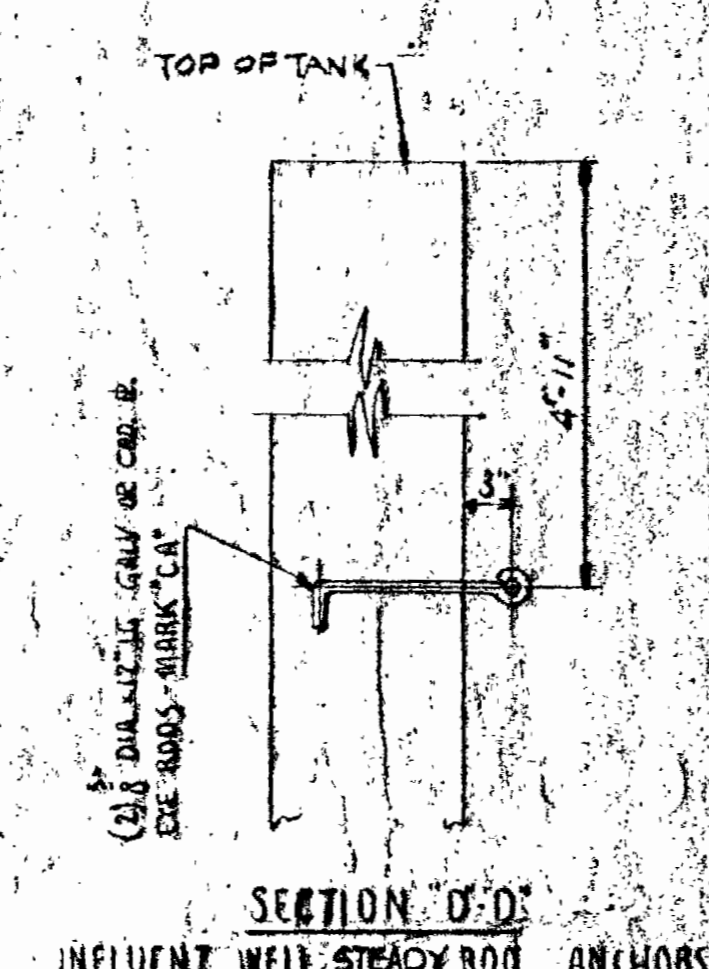
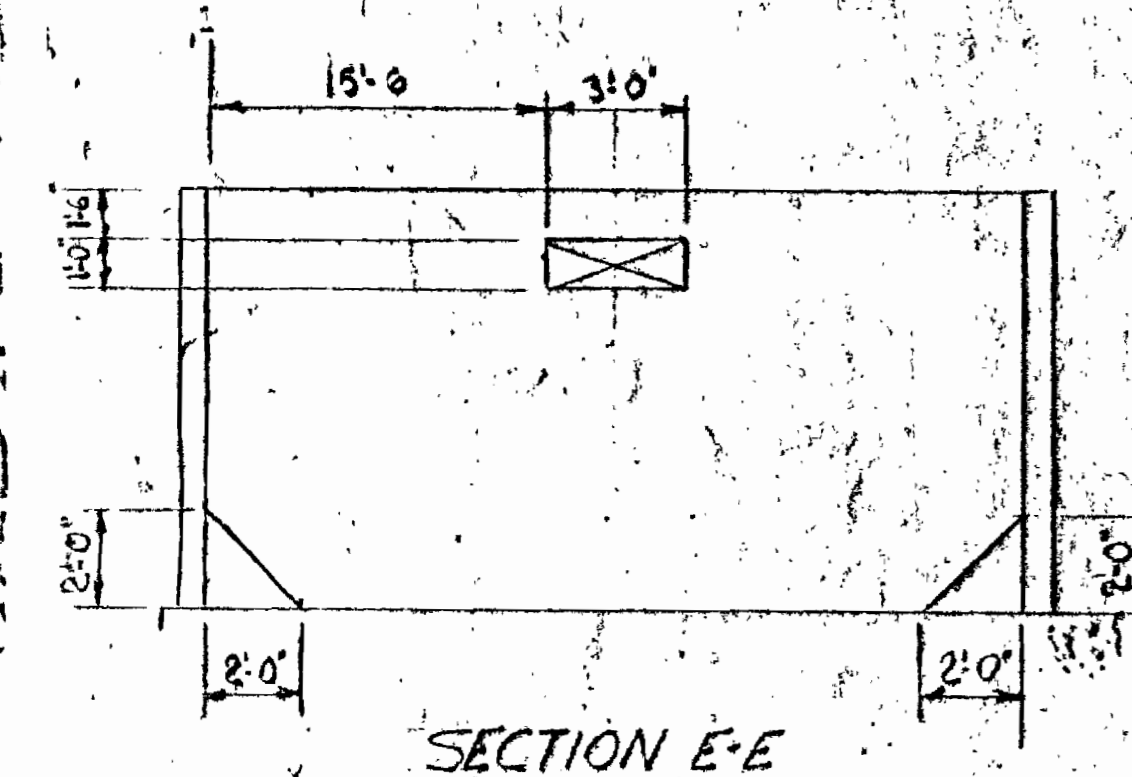
W.O. GOSO

AS BUILT 5/2/72

02-413



- NOTES:
1. ALL ANCHOR BOLTS & FLANGE BOLTS TO BE GALV. OR CAUDIUM PLATED
 2. ALL FLANGE GASKET TO BE 1/8" RUBBER
 3. WALL PIPE & WALL SLEEVES TO BE FURNISHED BY DRAYO
 4. ALL INTERNAL C.I. PIPE CONNECTING TO WALL PIPE WILL BE FURNISHED BY DRAYO ALONG WITH WALL PIPE BEFORE CONC. IS POURED TO INSURE ALIGNMENT

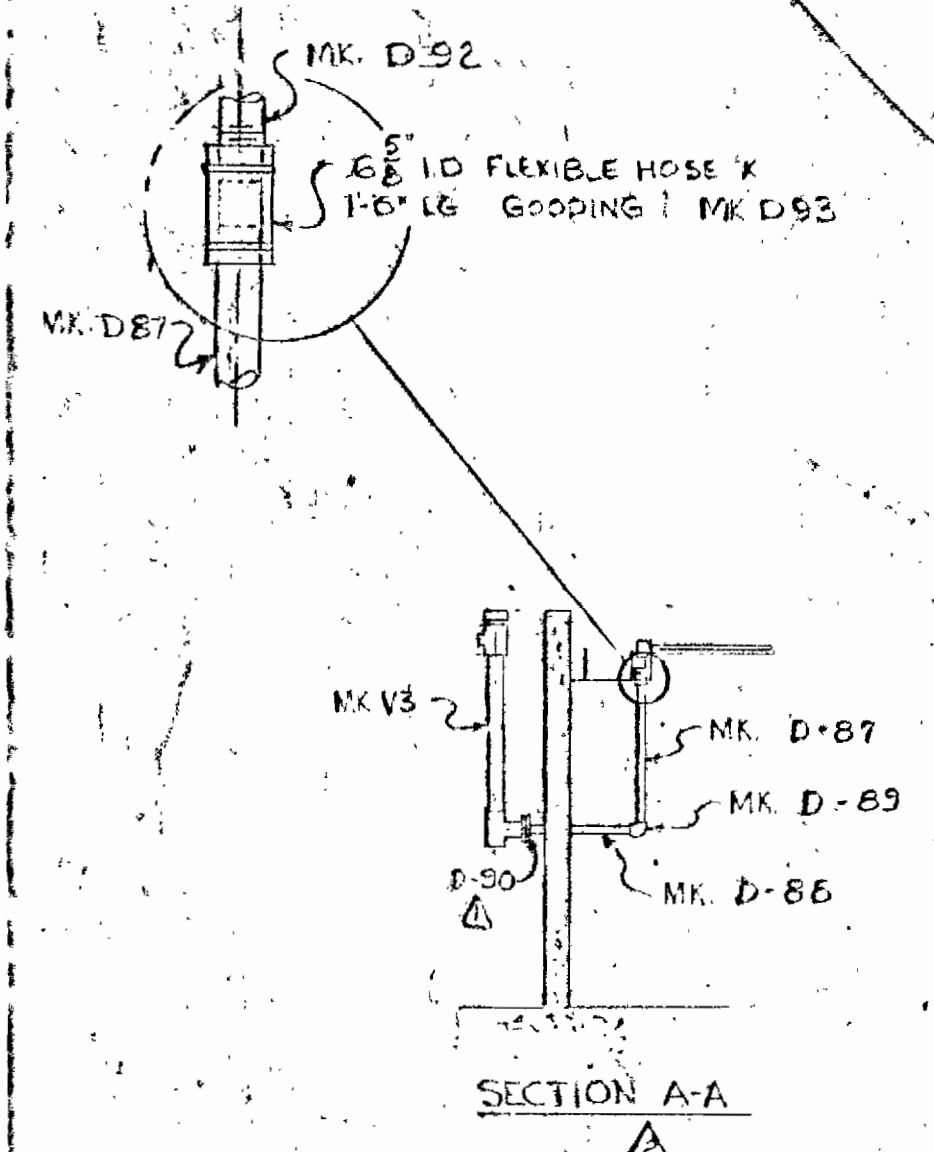
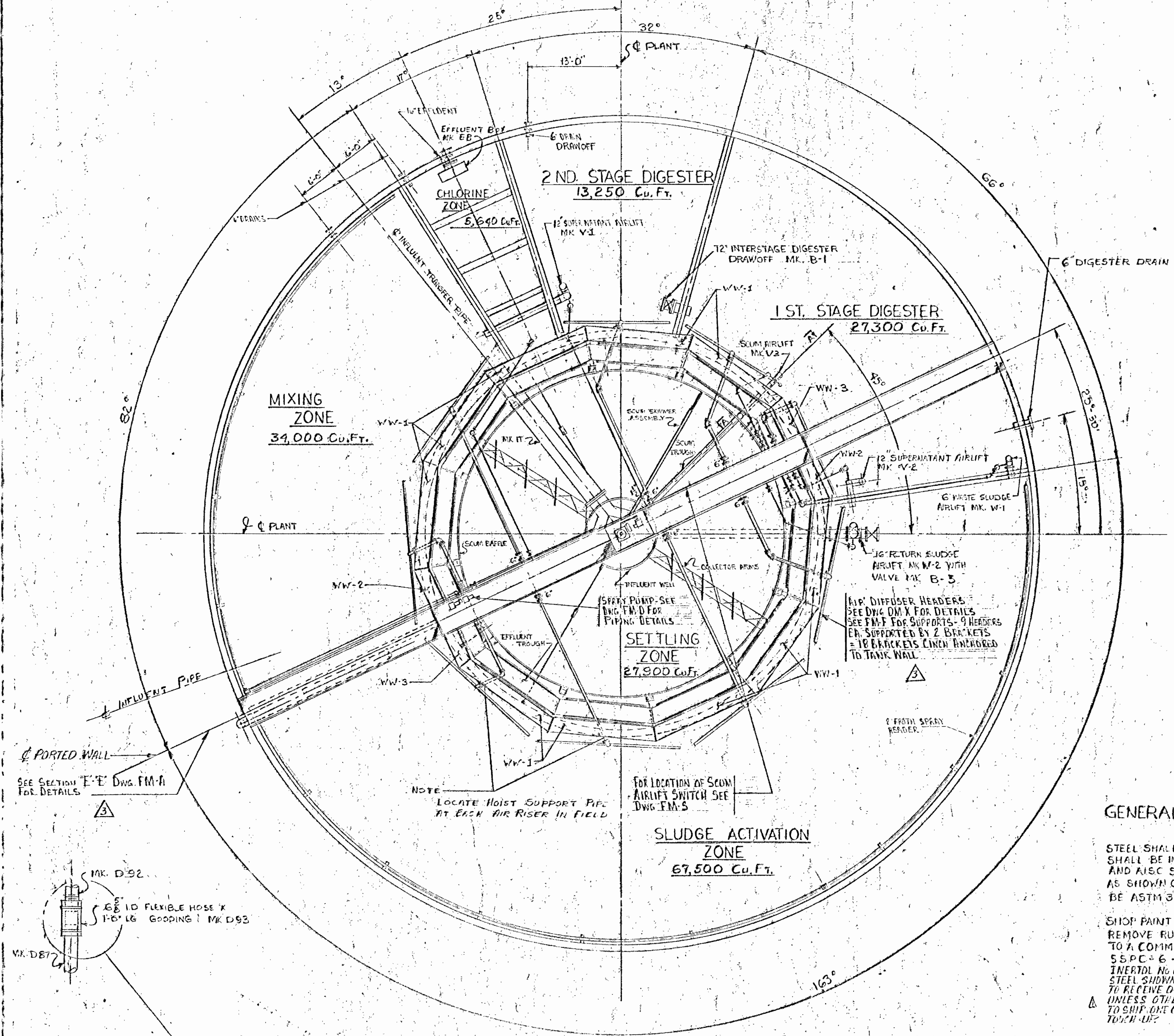


ISSUED BY: [Signature] DATE PRINTED: 3-13-67 FOR APPROVAL

DRAYO AEROPACK SEWAGE TREATMENT PLANT HOWARD COUNTY, MARYLAND \$1,000,000 G.P.D. IMBEDDED ITEMS			
3-13-67	ADDED ELEV.	WNP	AMP
2-5-67	GEN. REVISION	WNP	AMP
1-21-67	Rev. MK No.	WNP	AMP
NO. DATE	DESCRIPTION	BY	CH APP'D
REVISIONS			
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DRAYO CORPORATION, PITTSBURGH, PA.			DN

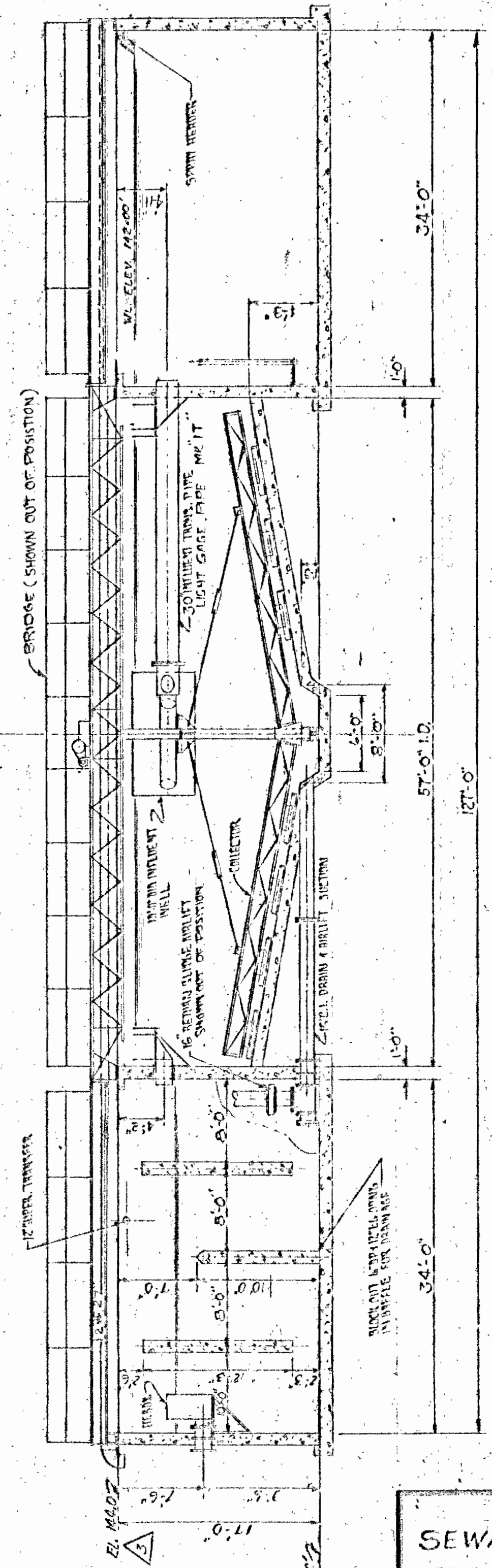
WTA 1023 DRAWING NO. FM-7A

JMB



GENERAL NOTES:

- STEEL SHALL BE A7 OR A36. WELDING SHALL BE IN ACCORDANCE WITH LATEST AWS. AND AISC SPECS. PIPE MATERIALS SHALL BE AS SHOWN ON DWGS. ANCHOR BOLTS SHALL BE ASTM 307
- SHOP PAINT STEEL SURFACES. REMOVE RUST, SCALE, ETC. BY SANDBLASTING TO A COMMERCIAL GRADE FINISH AS PER SSPC-6-65. APPLY ONE SHOP COAT OF INERTAL NO. 671 PASTIMATOR PRIMER ON ALL NON-SUBMERGED STEEL SURFACES. ALL OTHER STEEL TO RECEIVE ONE SHOP COAT OF INERTAL NO. 654 EPOXY PRIMER UNLESS OTHERWISE SPECIFIED ON THE DWGS. FABRICATOR IS TO SHOP ONE CALLOY OF EACH RIMMER WITH STEEL FOR FIELD TOUCH UP.
- DO NOT PAINT ALUMINUM OR GALVANIZED SURFACES
- DENOTES ITEMS PURCHASED BY DRAYO AND SHIPPED TO THE JOBSITE (OR STEEL FABRICATOR IF FEED TO COMPLETE HIS WORK).
- △ ALL BOLTS, NUTS, WASHERS & WASHERS FOR ASSEMBLY OF PLANT & PIPING TO BE FURNISHED BY DRAYO UNLESS OTHERWISE SPECIFIED ON DRAWINGS.



DRAYO AEROPACK
SEWAGE TREATMENT PLANT
HOWARD COUNTY, MARYLAND
2,000,000 G.P.D.
GENERAL ARRANGEMENT

NO.	DATE	DESCRIPTION	BY	CHK	APP'D
3-11-69		REVISED PER ENGR'S DIRECTION	W.K.	J.M.P.	
2-5-69		GEN. REVISIONS	W.K.	J.M.P.	
1-21-69		REVISED NOTES & P.N. NO'S	W.K.	J.M.P.	

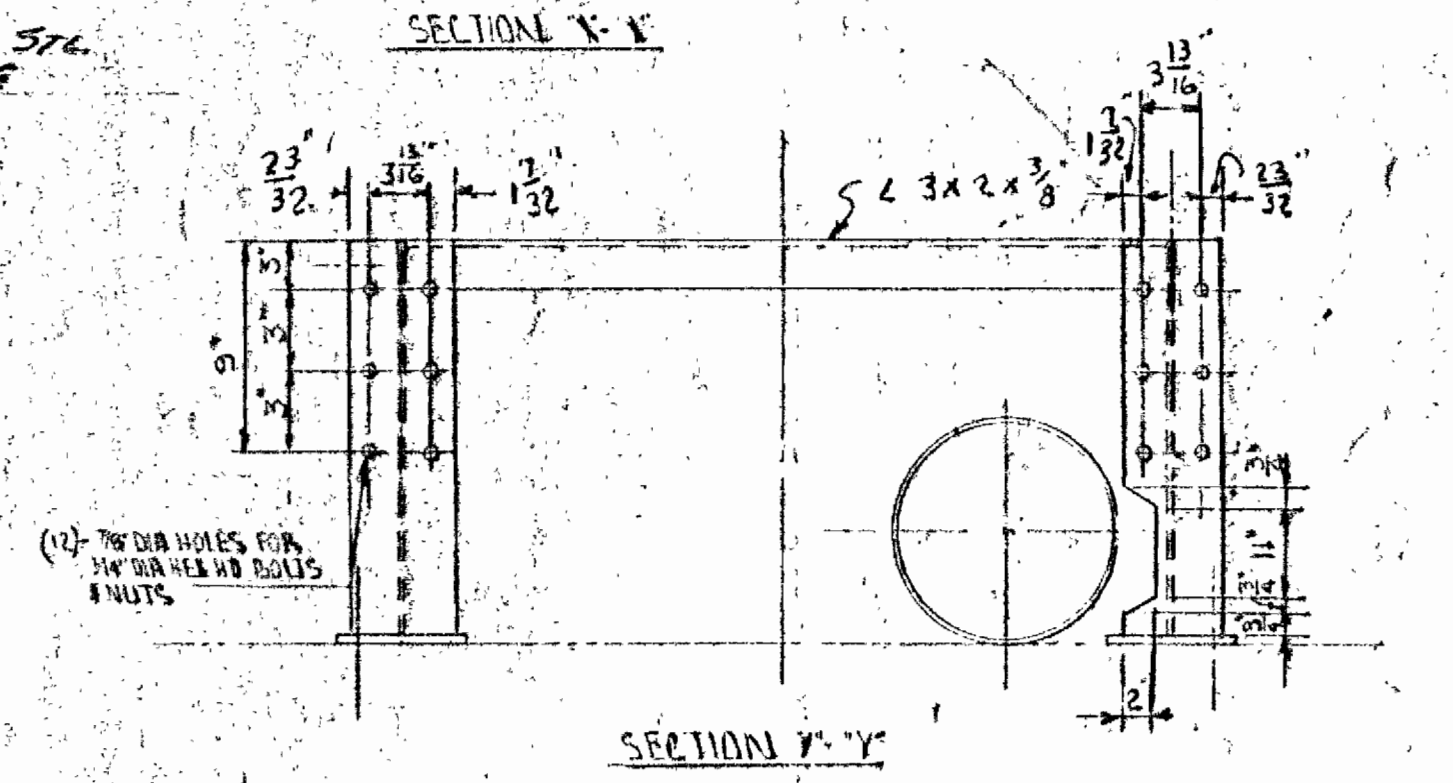
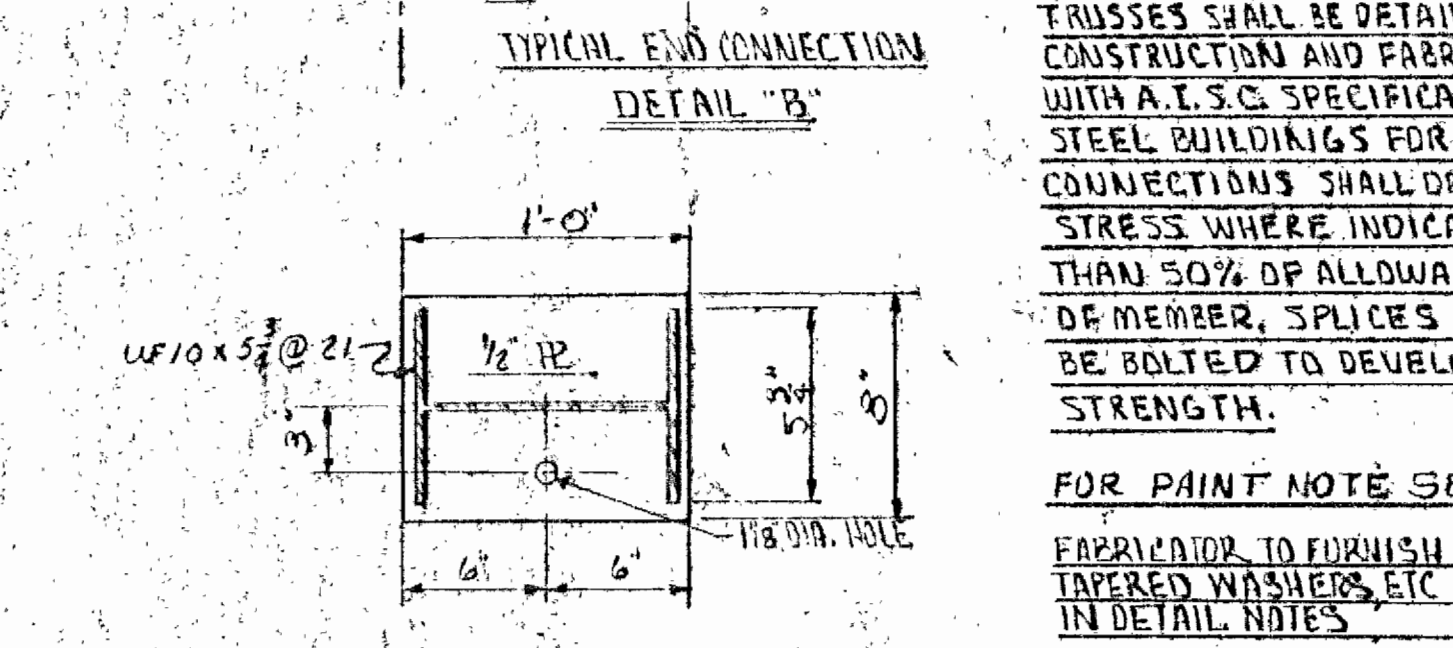
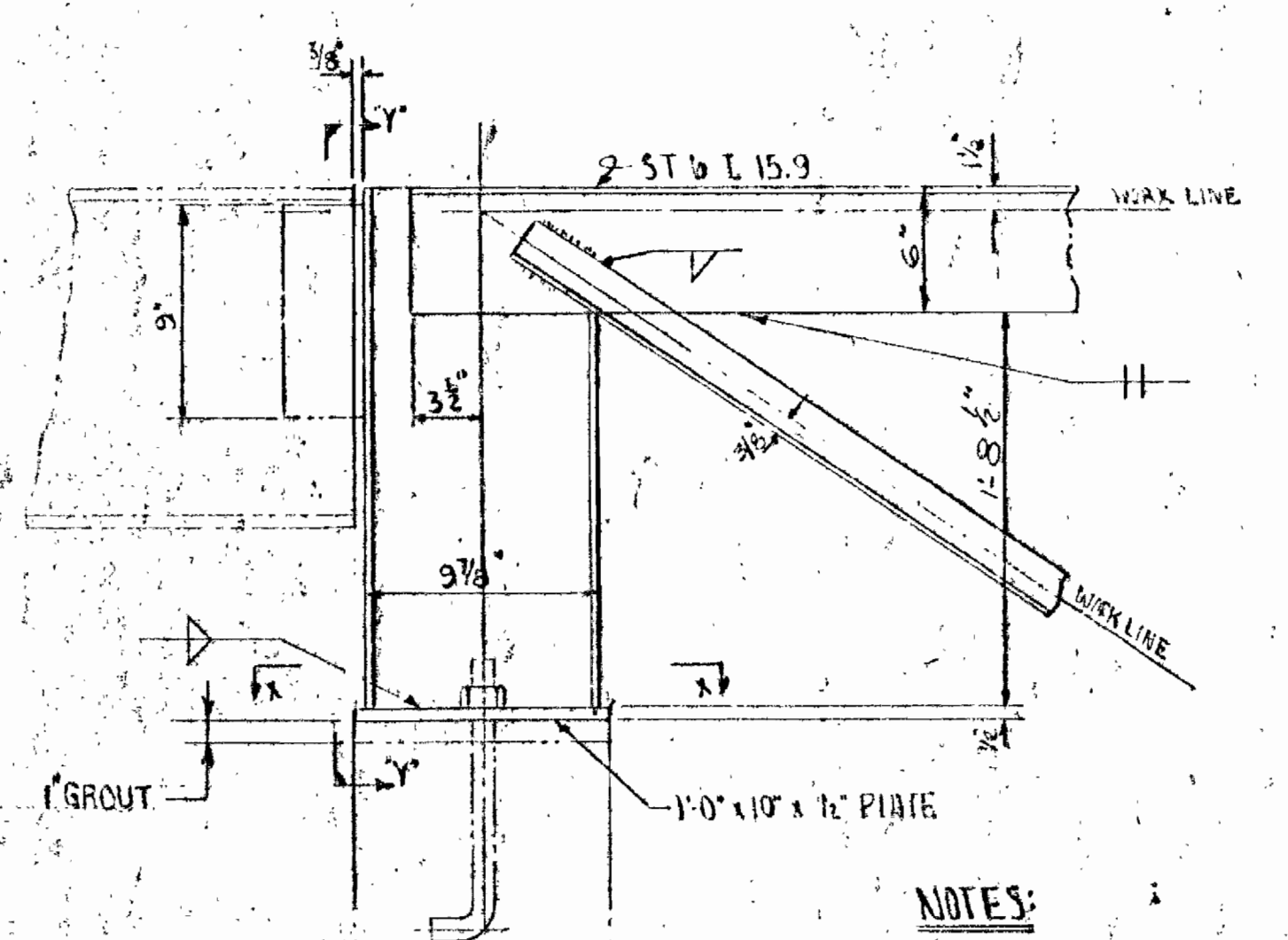
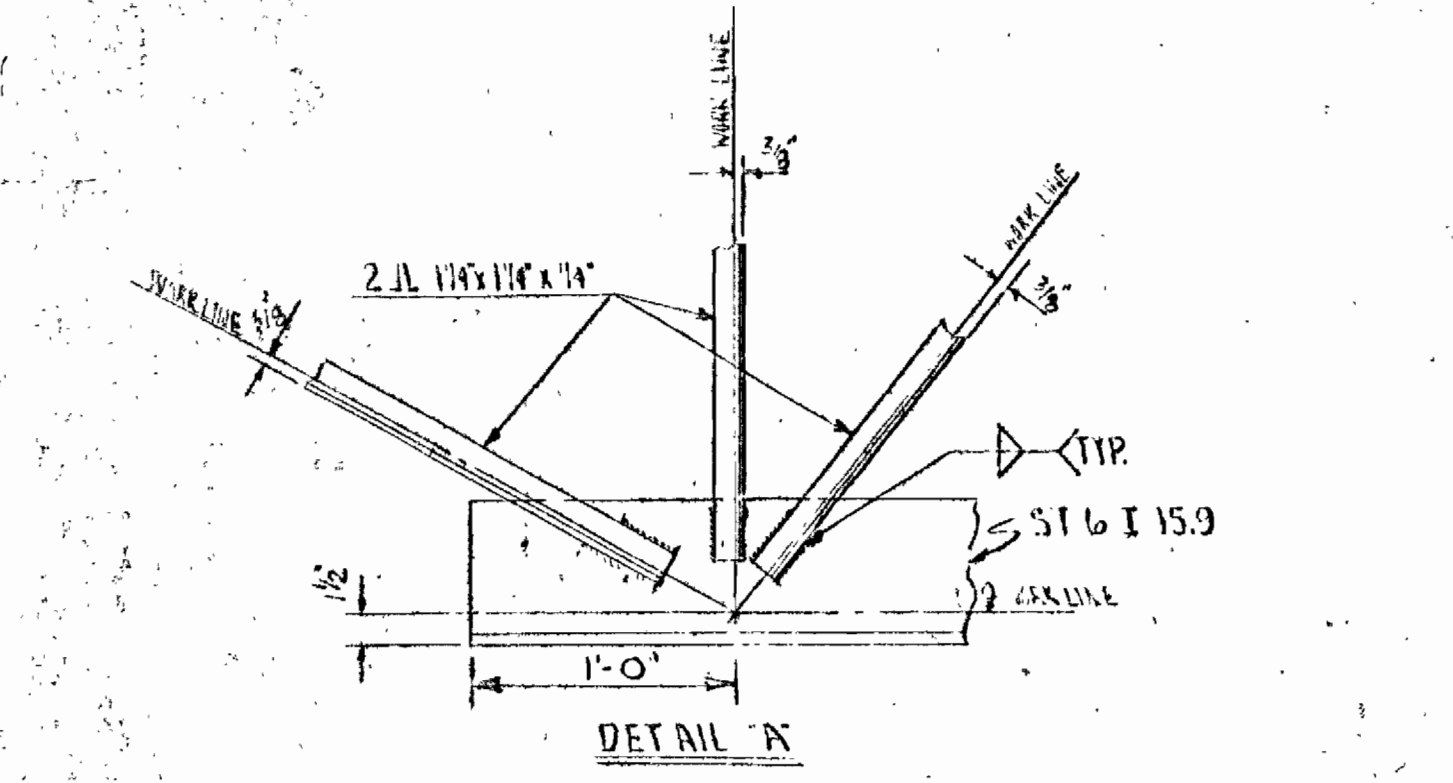
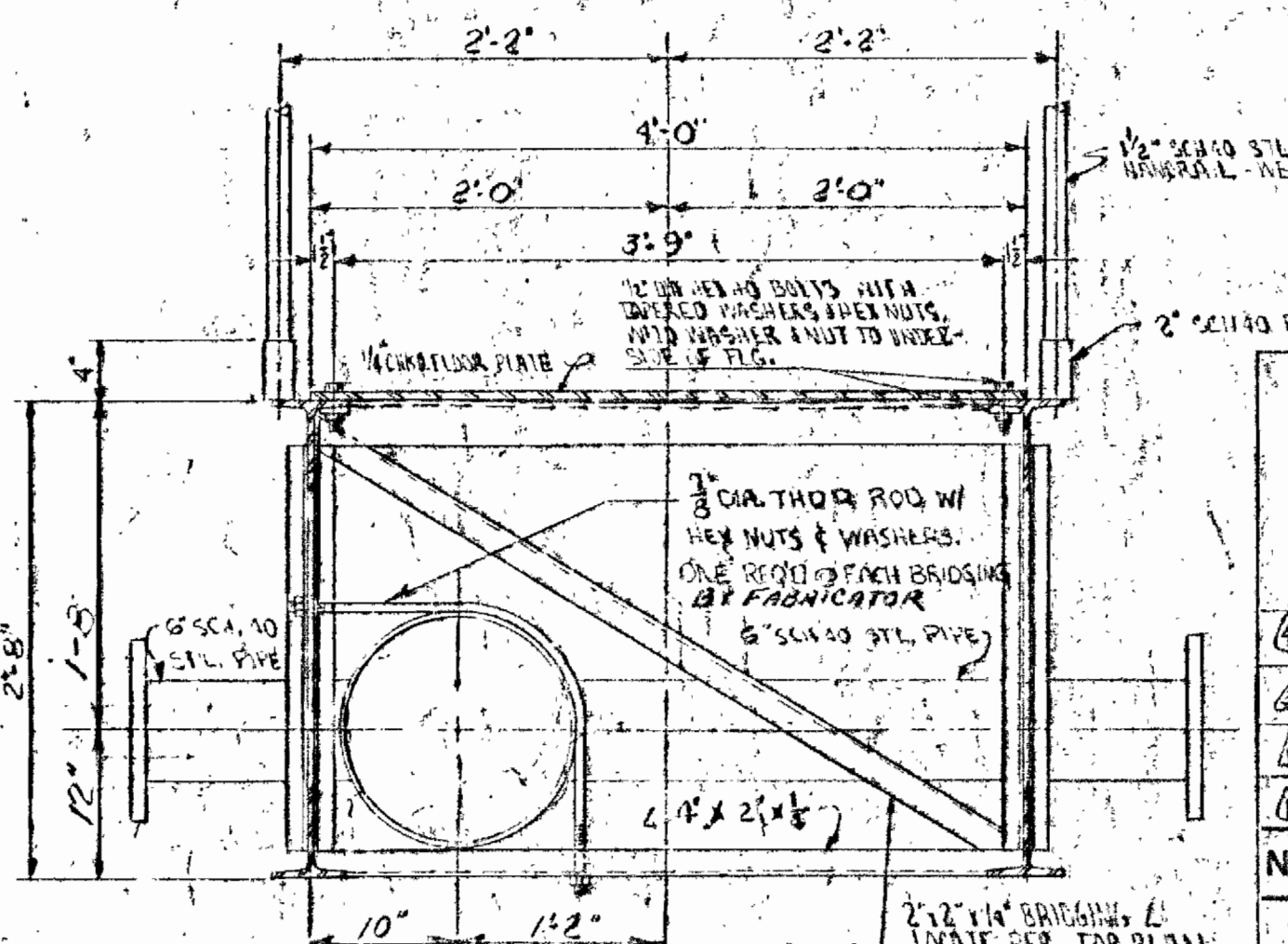
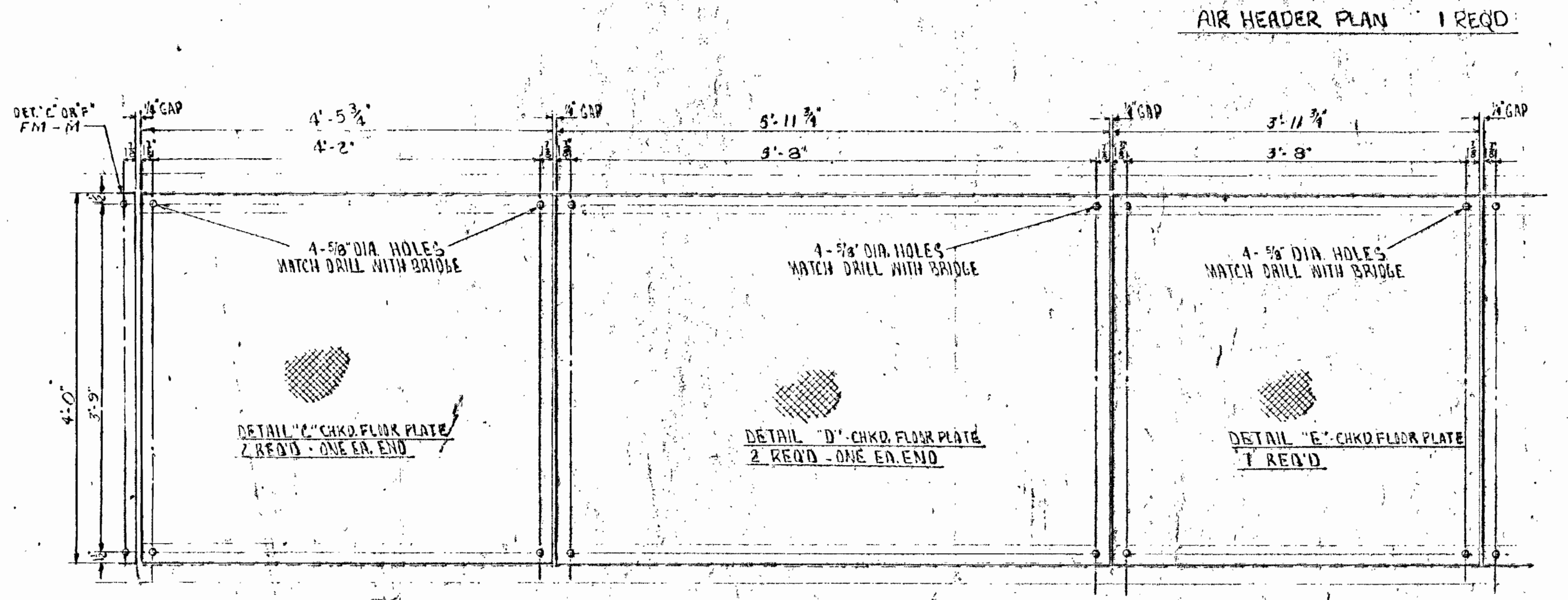
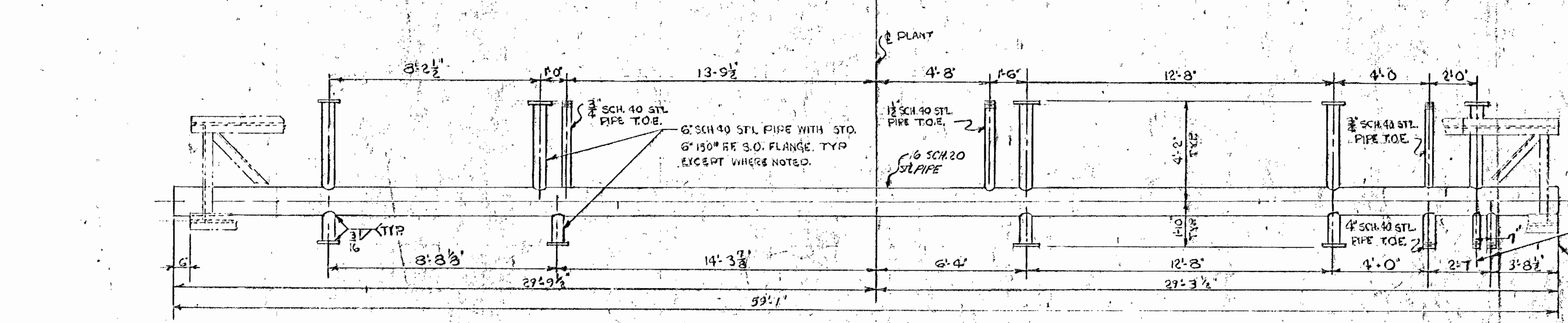
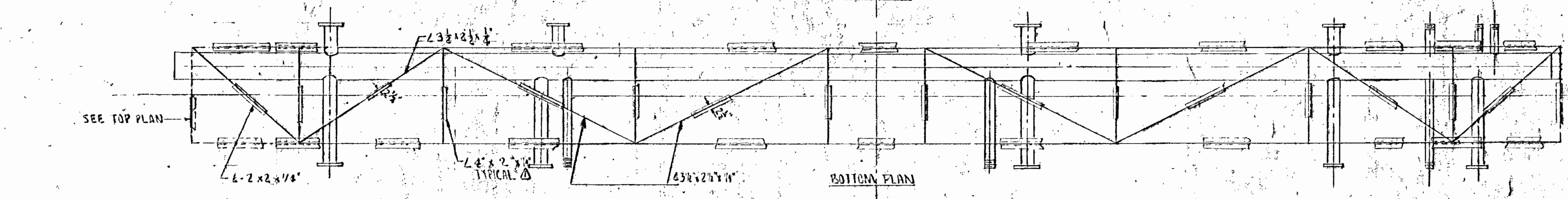
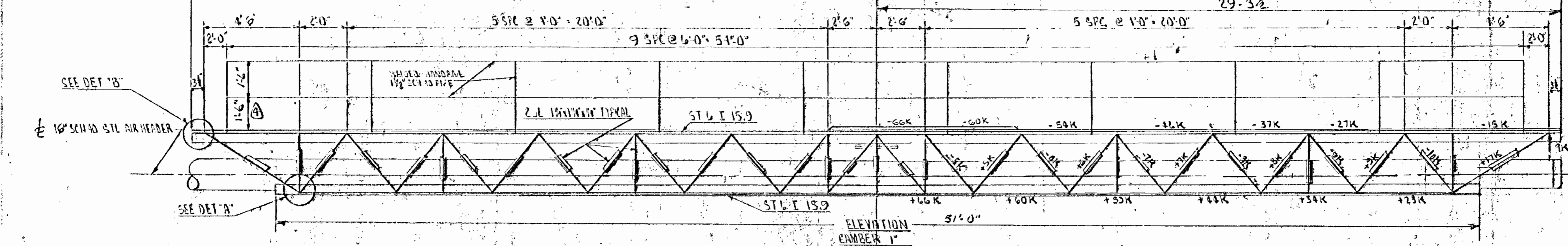
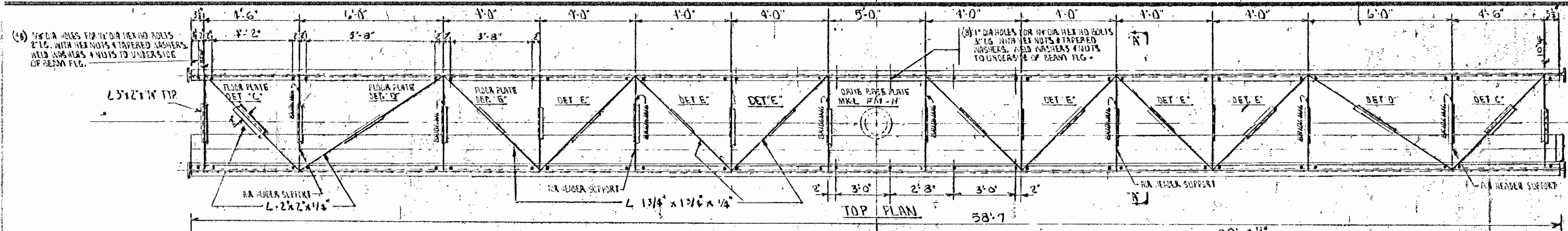
SCALE: 1/4" = 1'-0"	APP'D: <i>J.M.P.</i>
DR: <i>W.K.</i>	DATE: 1-15-69

REVISIONS	

DRAYO CORPORATION, PITTSBURGH, PA. 175

WTA-1023
DRAWING NO.
J.M.P.

ISSUE NO. 4 DATE PRINTED 8-13-69
FOR APPROVAL



NOTES:
 TRUSSES SHALL BE DETAILED FOR WELDED CONSTRUCTION AND FABRICATED IN ACCORDANCE WITH A.I.S.C. SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS FOR A7 OR A36 STEEL. CONNECTIONS SHALL DEVELOP DESIGN STRESS WHERE INDICATED, BUT NOT LESS THAN 50% OF ALLOWABLE STRENGTH OF MEMBER. SPLICES IF REQ'D SHALL BE BOLTED TO DEVELOP FULL MEMBER STRENGTH.
 FOR PAINT NOTE SEE DWG. FM-B
 FABRICATOR TO FURNISH BOLTS, NUTS, TAPERED WASHERS, ETC. WHERE SPEC. IN DETAIL NOTES.

NO.	DATE	DESCRIPTION	BY	CH	APP'D
1	4-7-69	CHG'D HANDRAIL HEIGHT	WAF	J.P.	
2	3-27-69	CHG'D HANDRAIL HEIGHT	WAF	J.P.	
3	2-5-69	GEN. REVISIONS	WAF	WAF	
4	1-21-69	CHG'D ANCHOR SIZE	WAF	WAF	

DRAVO AEROPACK, SEWAGE TREATMENT PLANT, HOWARD COUNTY, MARYLAND, 2,000,000 G.P.D.

BRIDGE DETAILS

SCALE: 1/4" = 1'-0"

DR: WDC
 WAF
 WAF
 WAF

APP'D: J.P.
 WAF
 WAF
 WAF

SECT: WATER TR.

DATE: 1-15-69

WTA 1023

DRAWING NO. FM-C

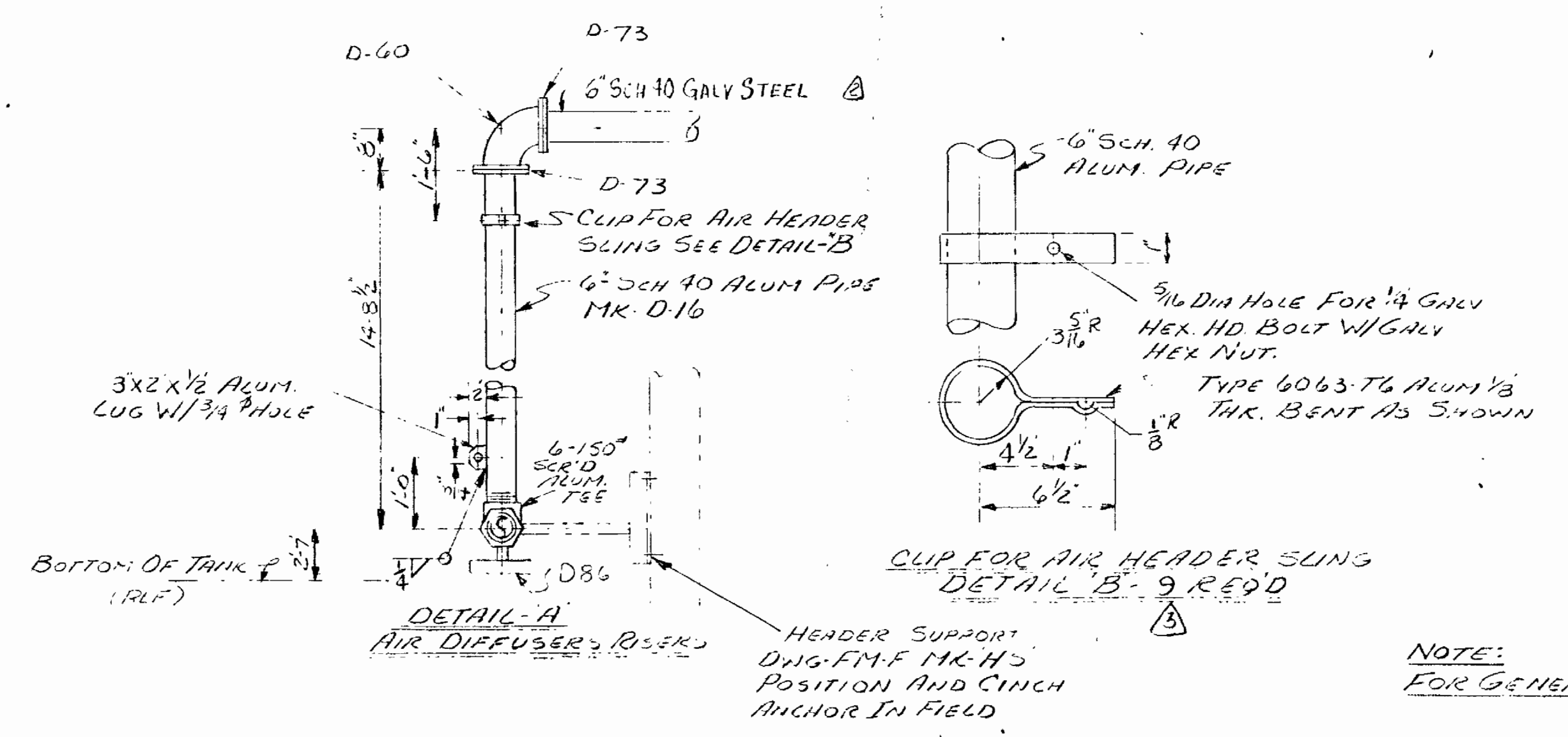
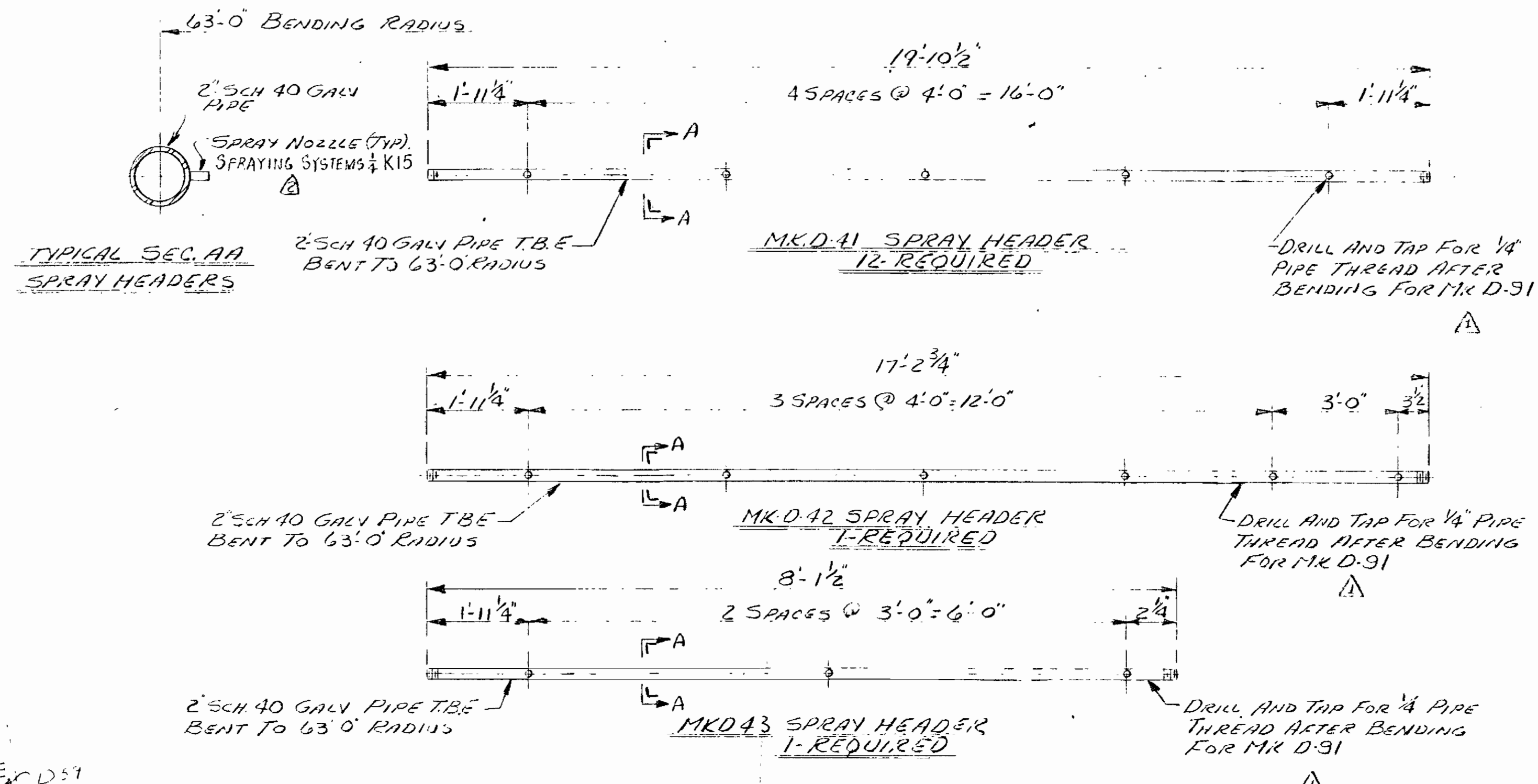
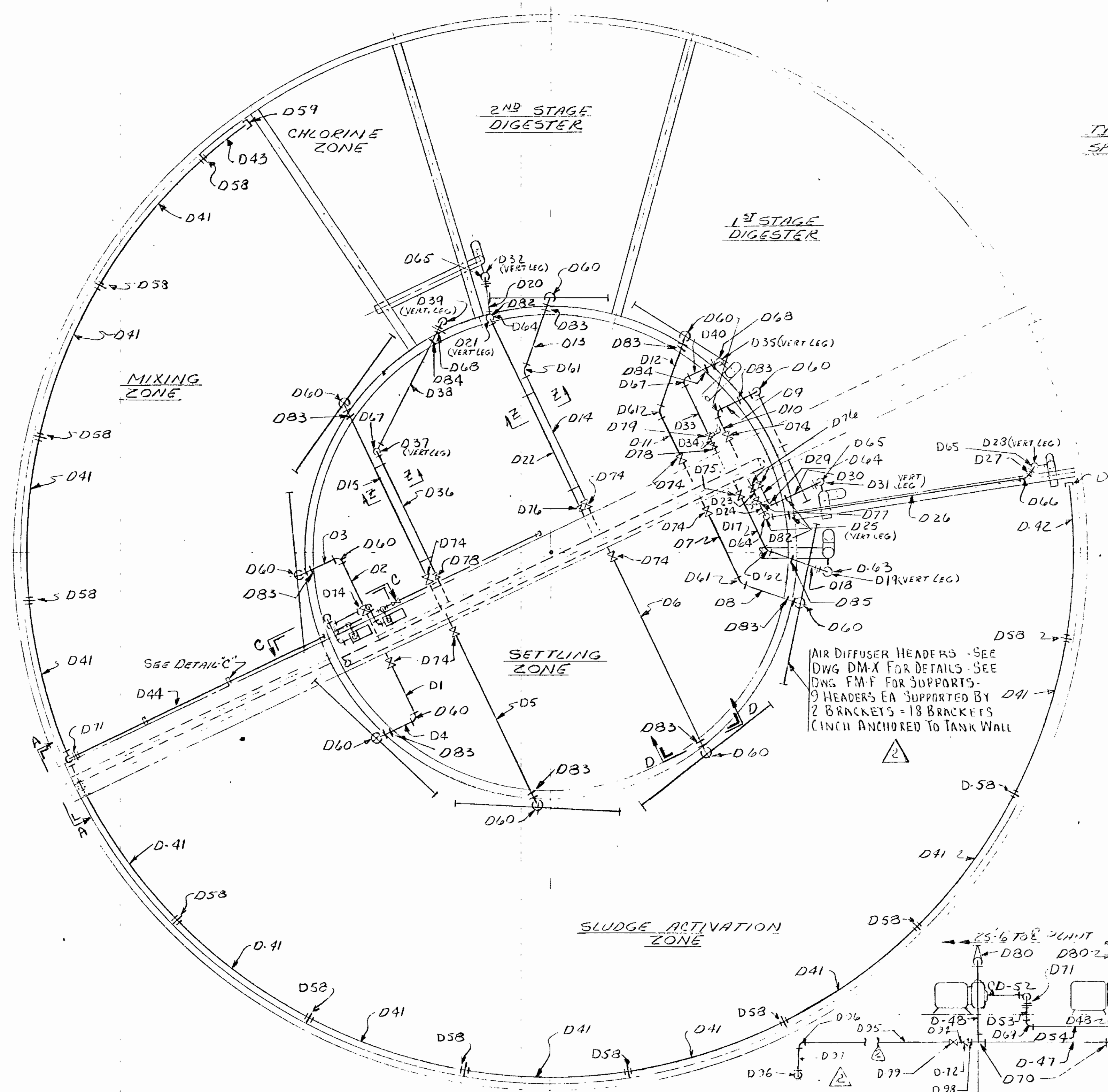
REVISIONS

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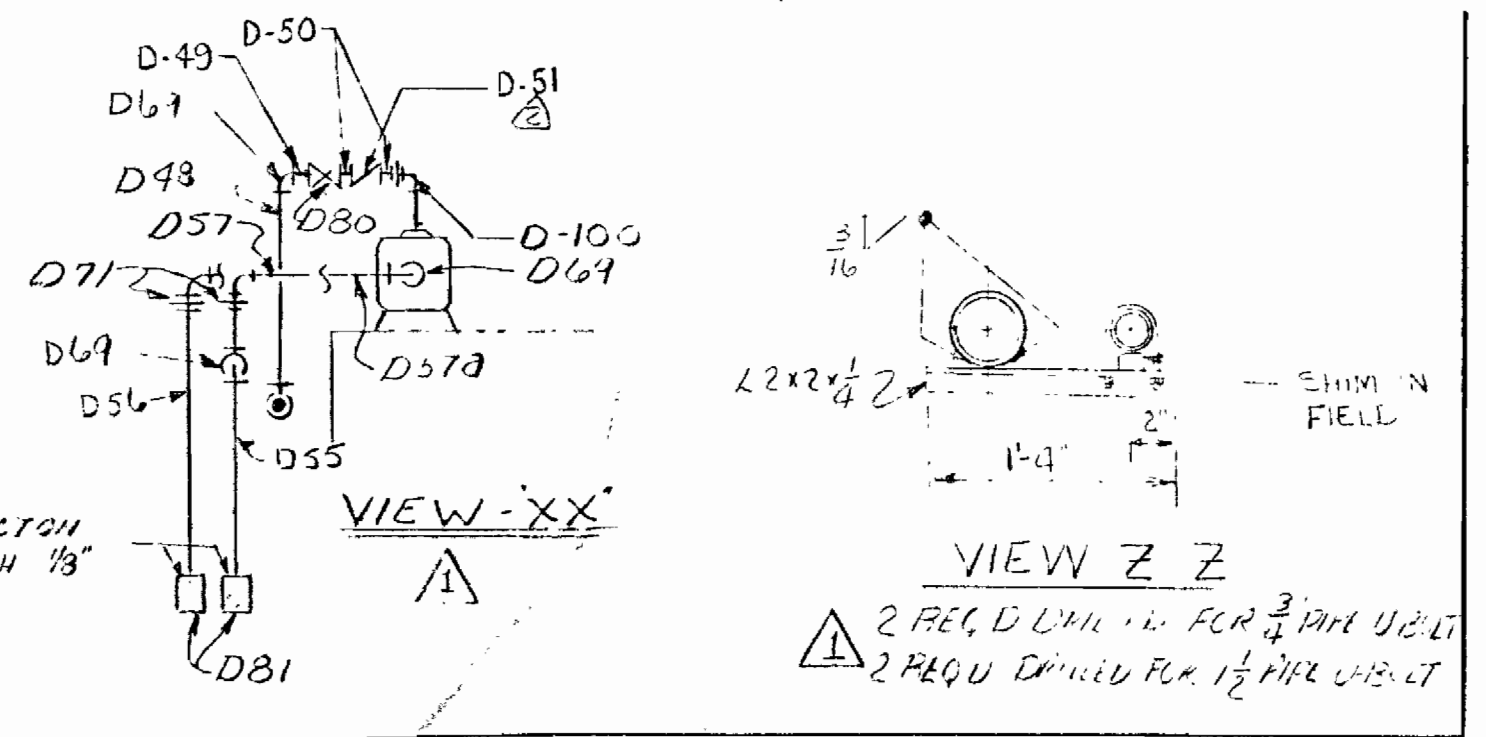
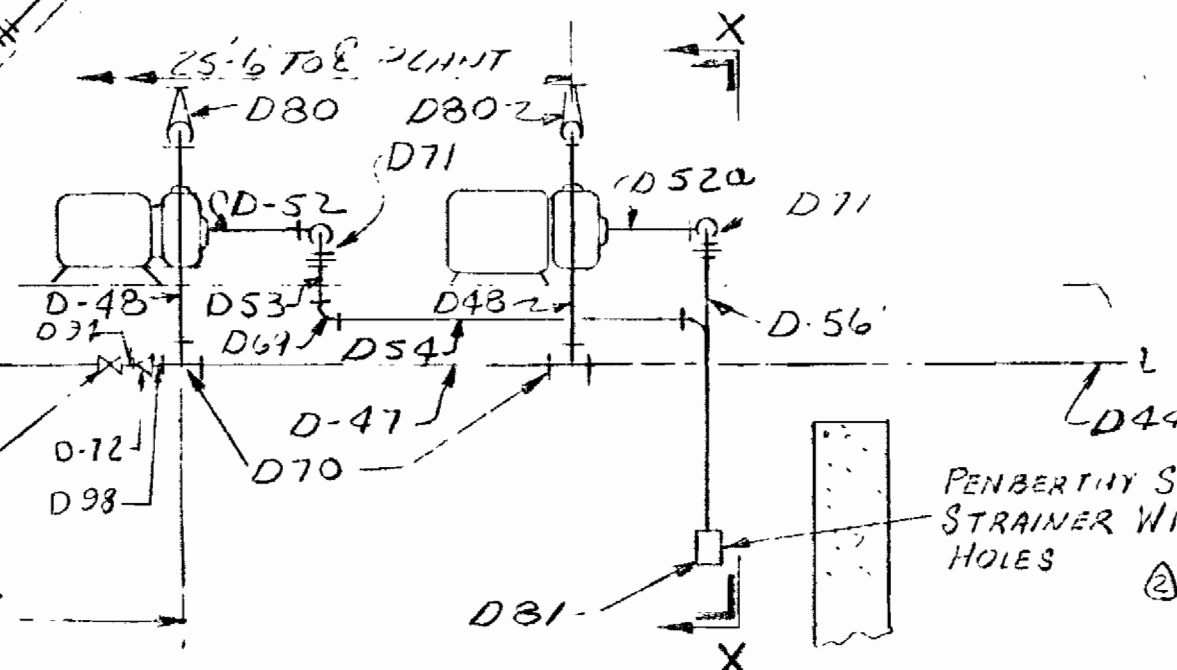
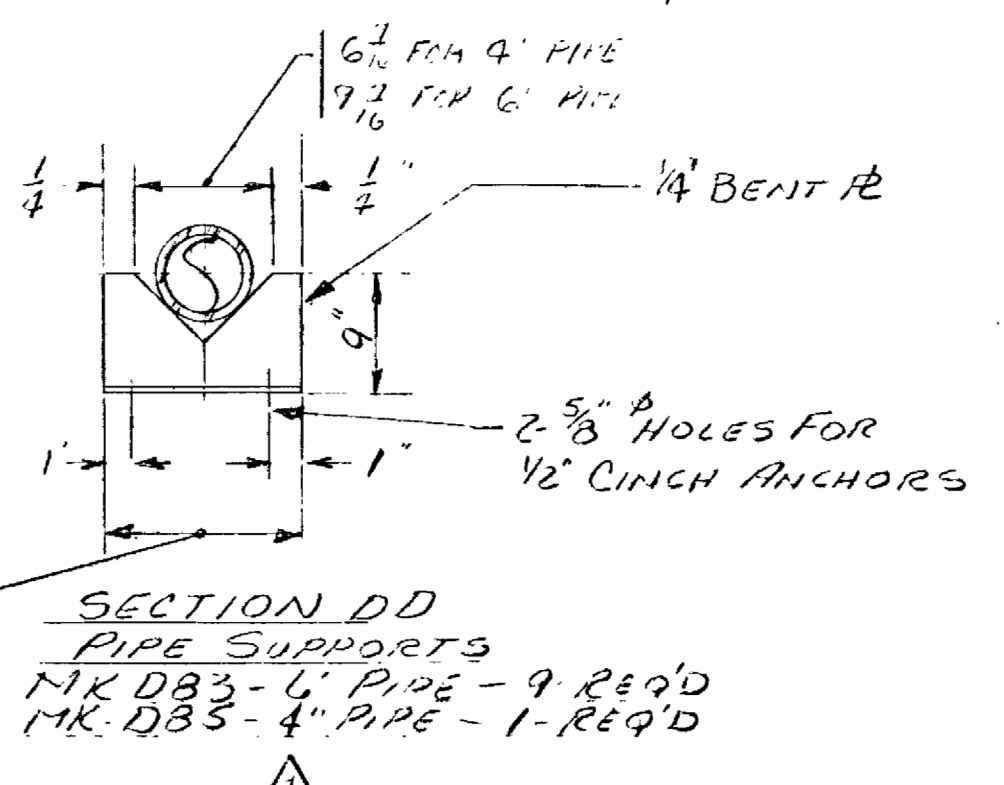
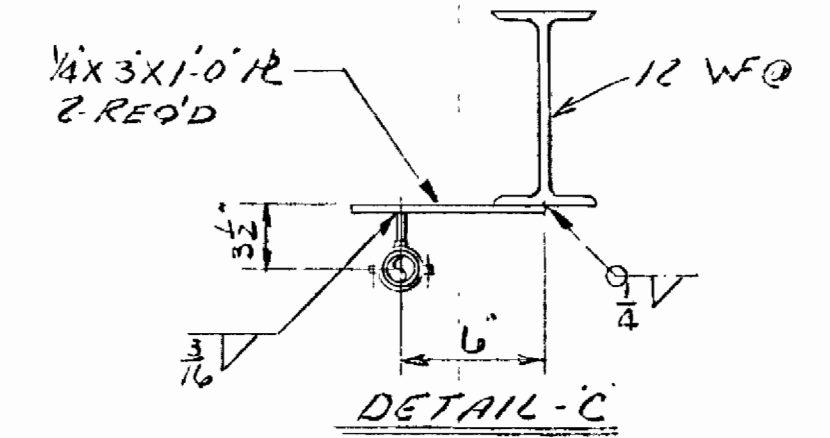
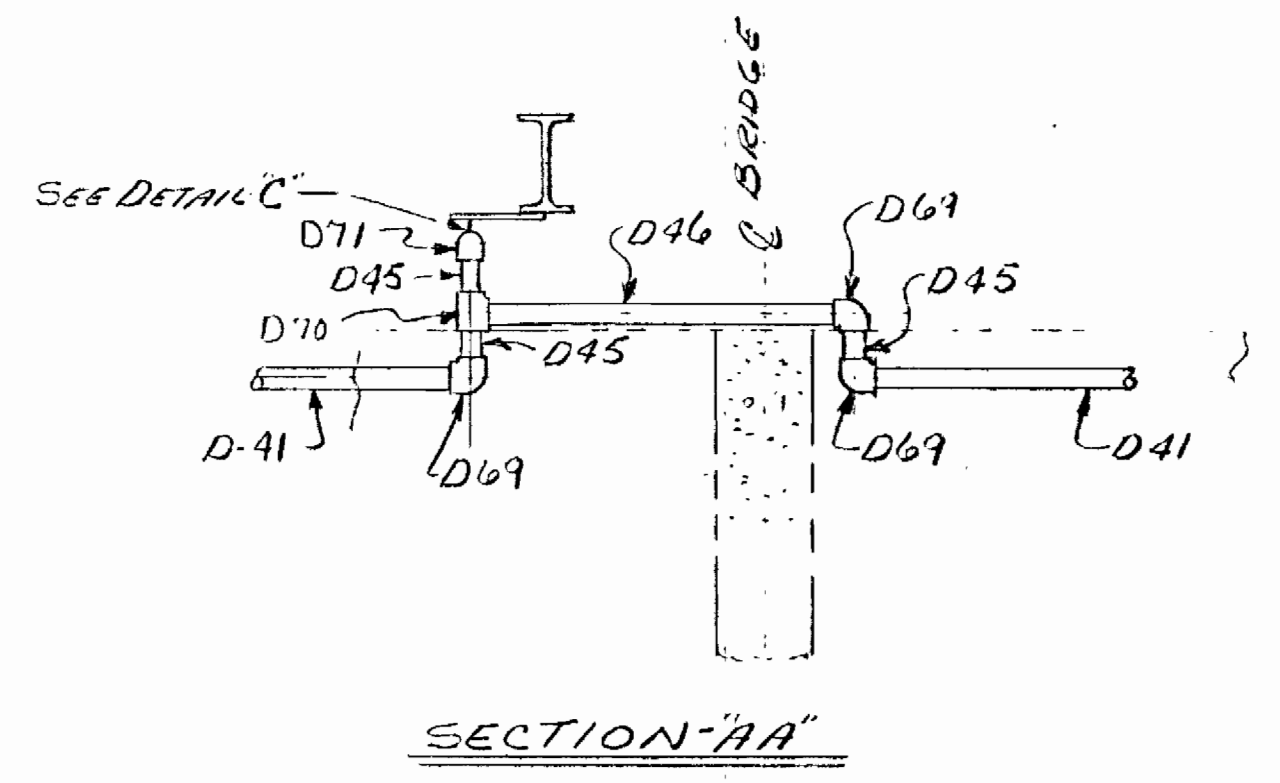
DRAVO CORPORATION, PITTSBURGH, PA.

ISSUE NO. 5 DATE PRINTED 4-7-69 FOR CONSTRUCTION

44-2812



NOTE: FOR GENERAL NOTES SEE DWG FM-B



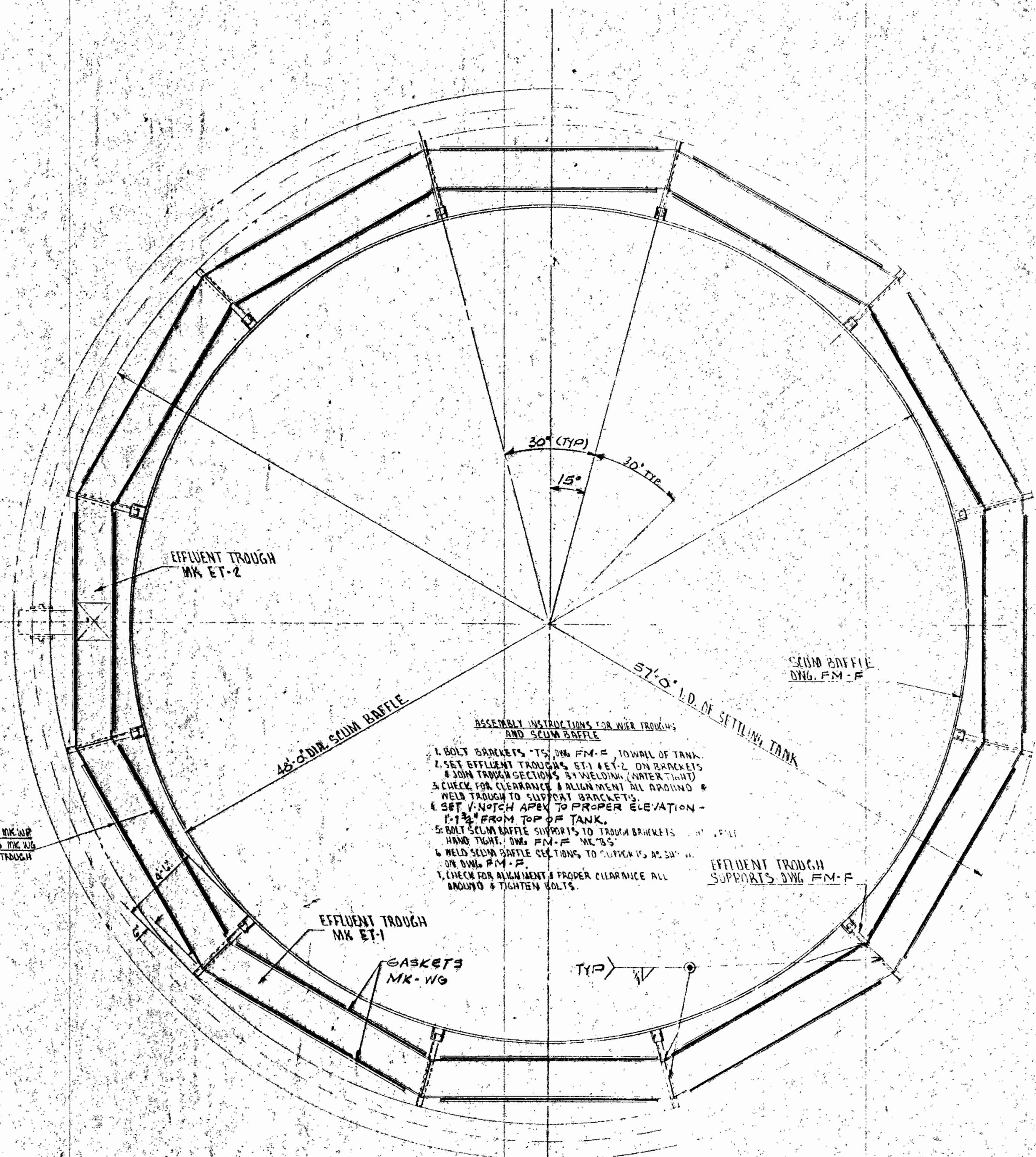
NO.	DATE	DESCRIPTION	BY	CH	APP'D
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2	3-12-69	REVISED PER ENGR'S DIRECTION	W.F.	W.C.	
3	2-11-69	REVISED PER GEN. MNGT	W.F.	W.C.	

DRAGO AEROPACK SEWAGE TREATMENT PLANT HOWARD COUNTY, MARYLAND 2,000,000 G.P.D.	
AIR & WATER PIPING	
SCALE 1/8" = 1'-0"	APP'D
DR. C. YOUNG & CH. ID. 11	J. E. Schaefer
SECT. WATER TR.	DATE 2-24-69

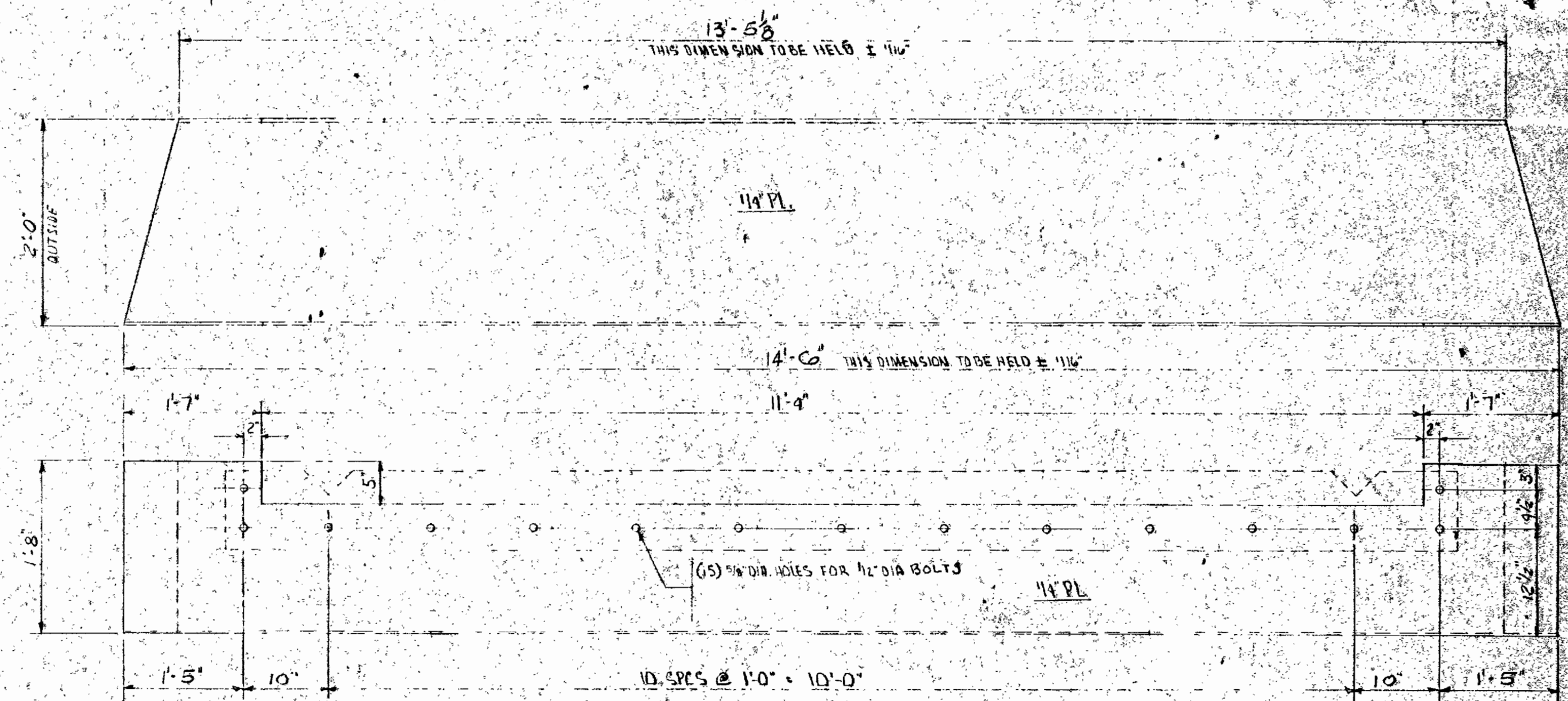
REVISIONS

DRAGO CORPORATION, PITTSBURGH, PA. DTY

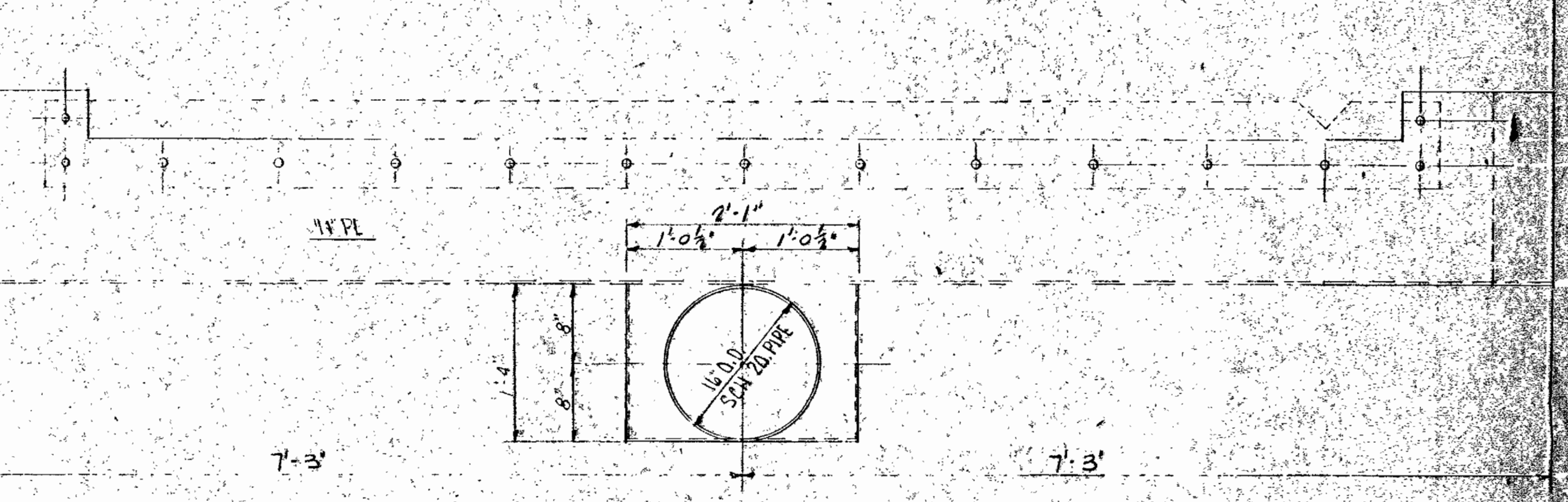
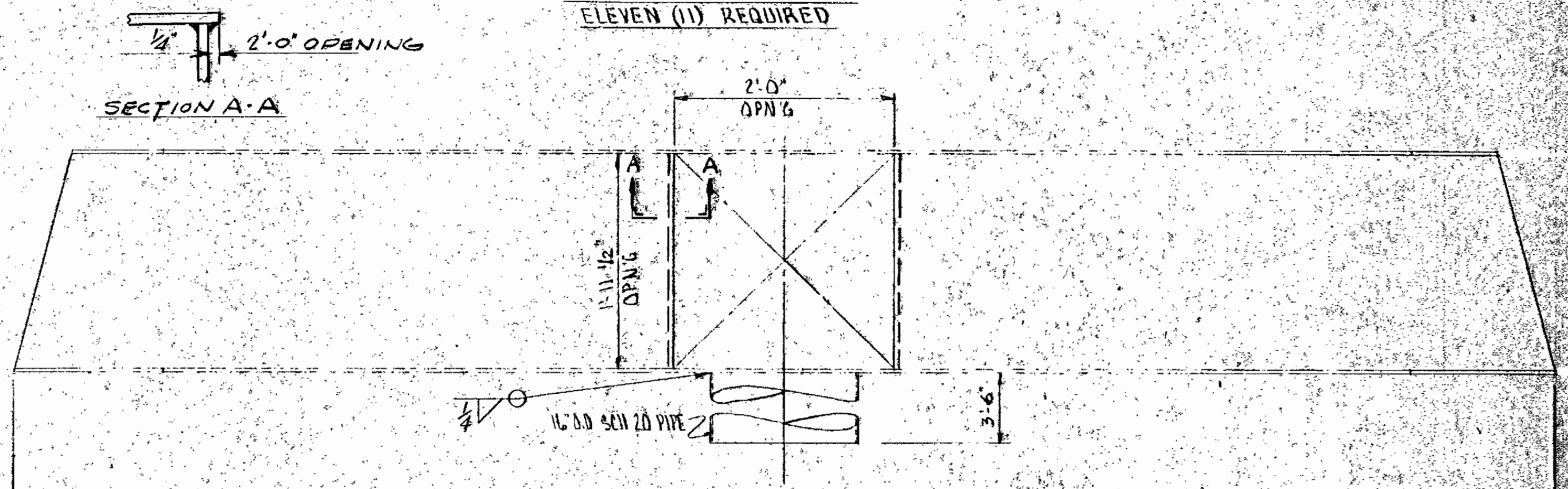
WTA-1023 DRAWING NO. FM-D



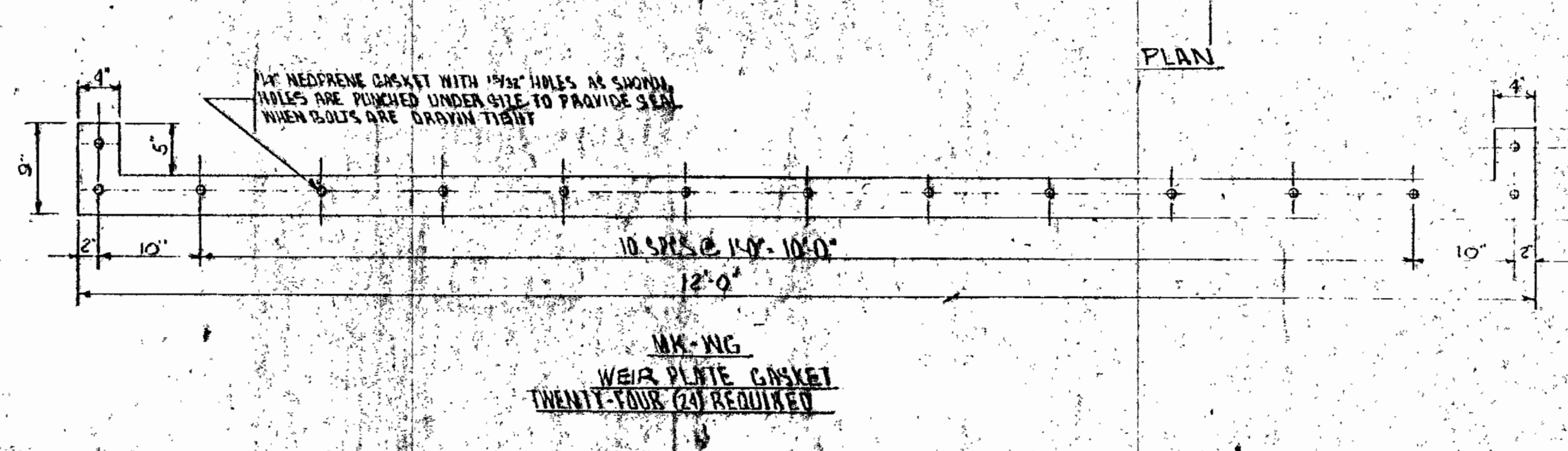
- ASSEMBLY INSTRUCTIONS FOR WEIR TROUGHS AND SCUM BAFFLE**
1. BOLT BRACKETS TO DWG. FM-F, TO WALL OF TANK.
 2. SET EFFLUENT TROUGHS, ET-1 & ET-2, ON BRACKETS.
 3. JOIN TROUGH SECTIONS BY WELDING (WATER TIGHT).
 4. CHECK FOR CLEARANCE & ALIGNMENT ALL AROUND & WELD TROUGH TO SUPPORT BRACKETS.
 5. SET V-NOTCH APERTURE TO PROPER ELEVATION - 1.13' FROM TOP OF TANK.
 6. BOLT SCUM BAFFLE SUPPORTS TO TROUGH BRACKETS USING TIGHT DING. FM-F, NUTS.
 7. WELD SCUM BAFFLE SECTIONS TO TROUGH AS SHOWN ON DWG. FM-F.
 8. CHECK FOR ALIGNMENT & PROPER CLEARANCE ALL AROUND & TIGHTEN BOLTS.



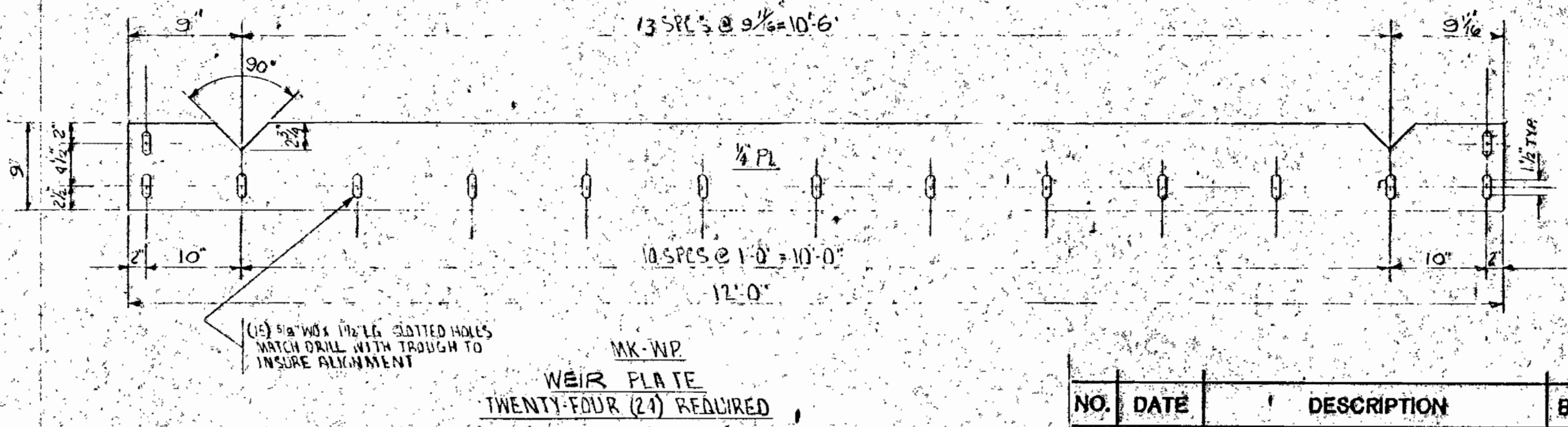
**MK ET-1
EFFLUENT WEIR TROUGH
ELEVEN (11) REQUIRED**



**MK ET-2
EFFLUENT WEIR TROUGH
ONE (1) REQUIRED
ALL DIMENSIONS IDENTICAL TO MK ET-1 EXCEPT AS NOTED**



**MK-WG
WEIR PLATE GASKET
TWENTY-FOUR (24) REQUIRED**



**MK-WP
WEIR PLATE
TWENTY-FOUR (24) REQUIRED**

NOTE:
FOR GENERAL NOTES SEE DWG. T-1116

**DRAGO AEROPACK
SEWAGE TREATMENT PLANT
HOWARD COUNTY, MARYLAND
2,000,000 G.P.D.
TROUGHS, WEIR, & GASKETS**

SCALE NONE
DRL. CH. MYP
SRET WATER TR.

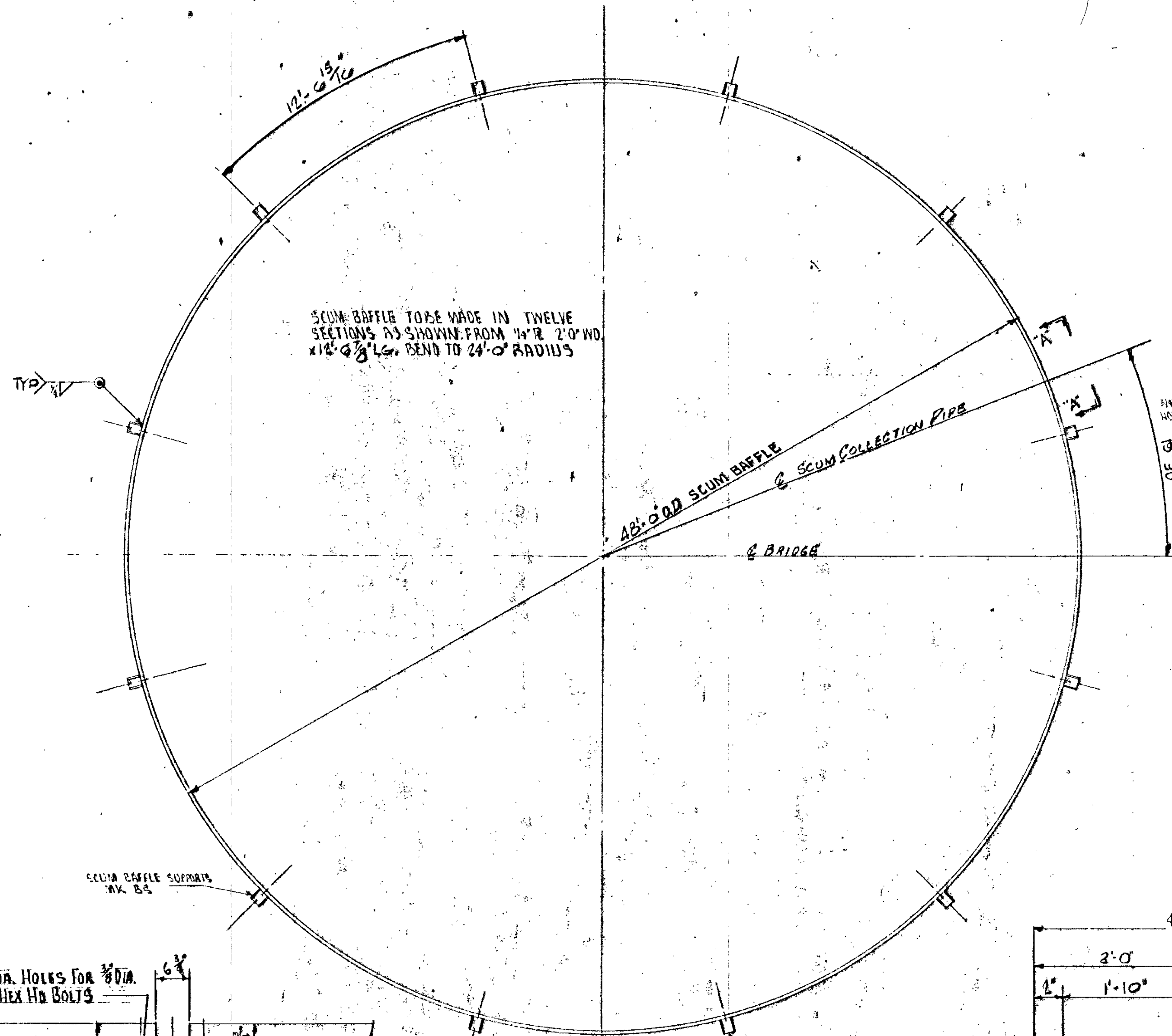
NO.	DATE	DESCRIPTION	BY	CH	APP'D
REVISIONS:					

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Dravo
DRAWINGS
PITTSBURGH, PA.

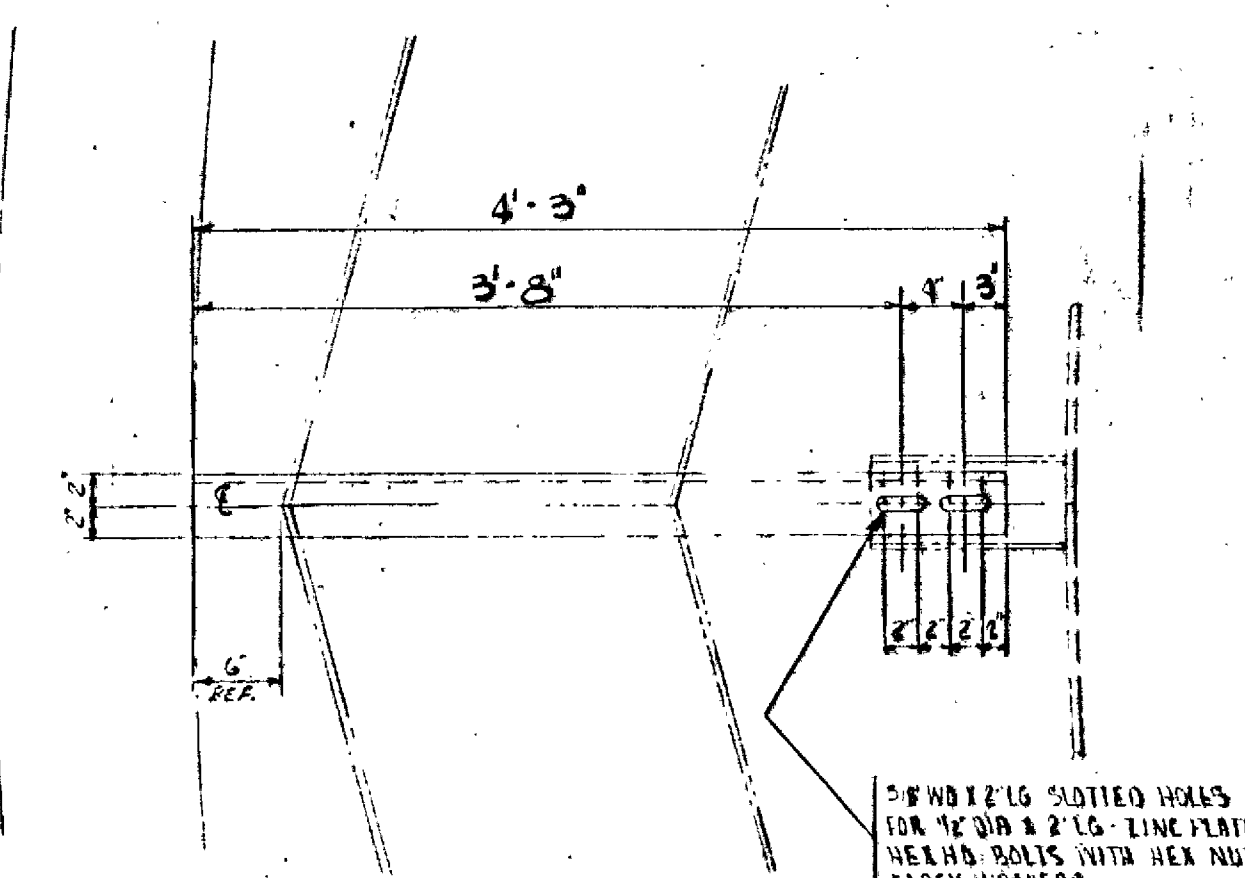
ISSUE 3 DATE PRINTED 2/28/62
FOR APPROVAL

01-1113

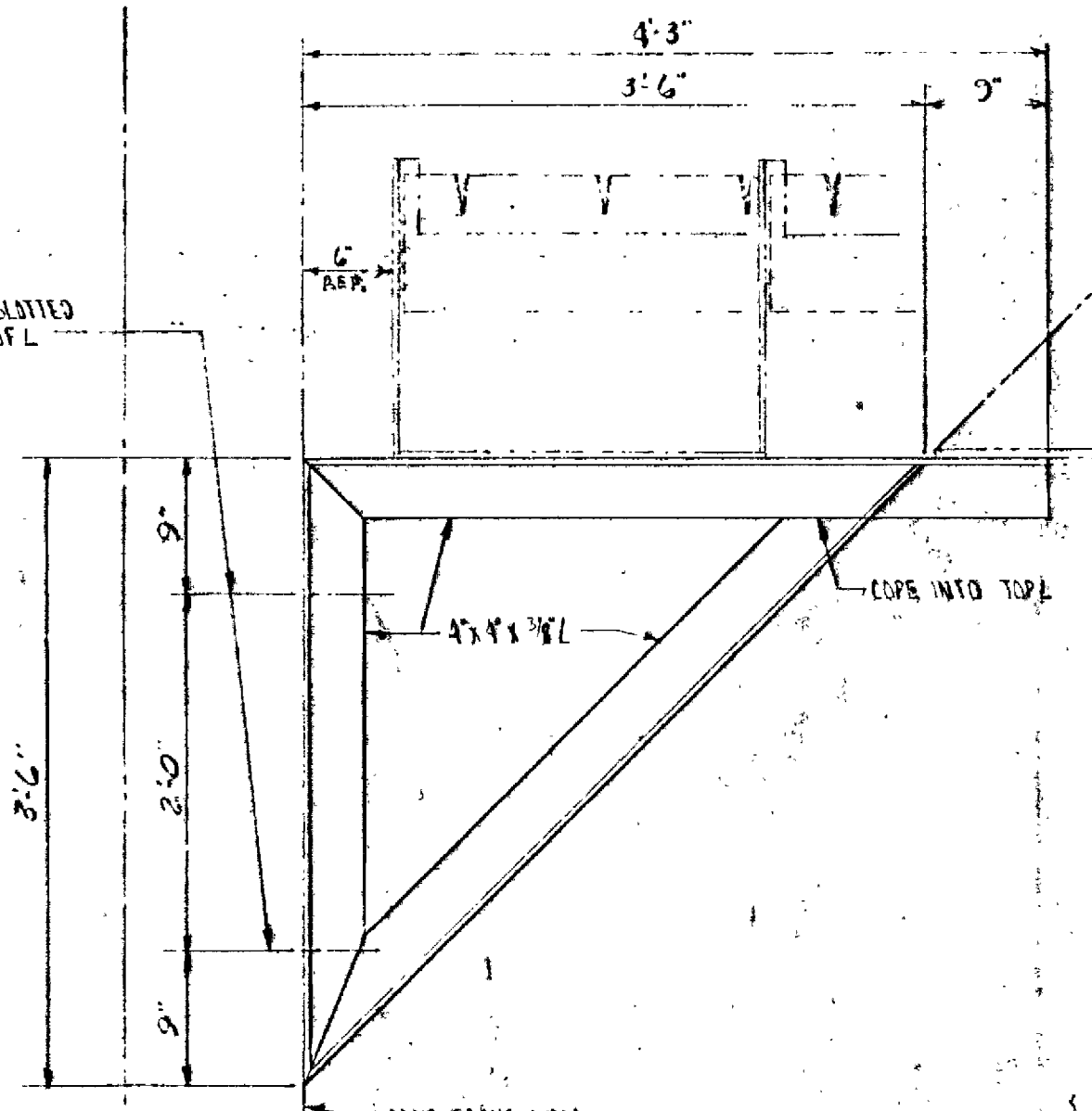


SCUM BAFFLE TO BE MADE IN TWELVE SECTIONS AS SHOWN FROM 1/4" R 2'-0" WD. X 12 @ 3/8" LG. SEND TO 24'-0" RADIUS

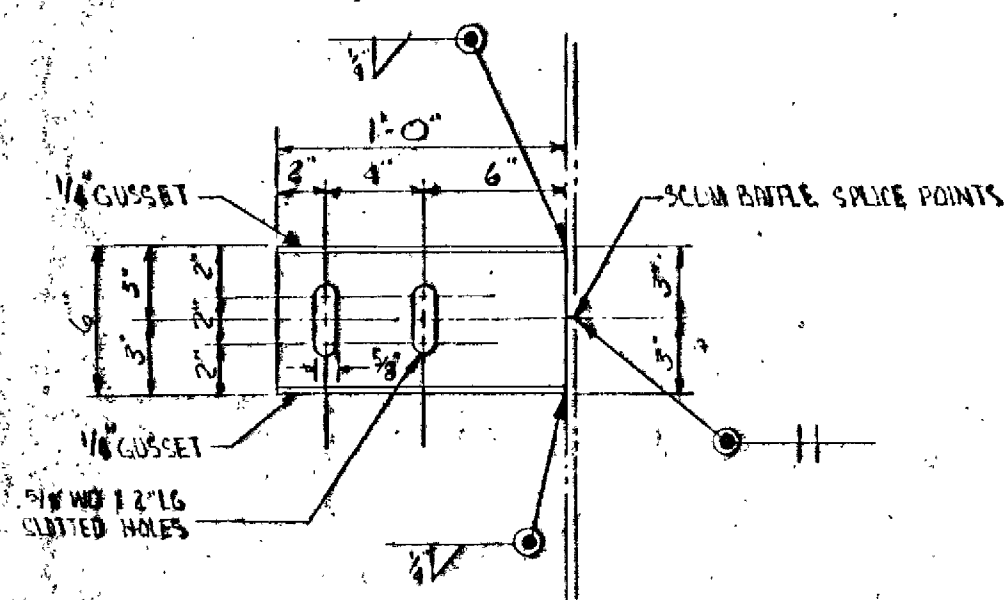
48'-0" OD SCUM BAFFLE & SCUM COLLECTION PIPE & BRIDGE



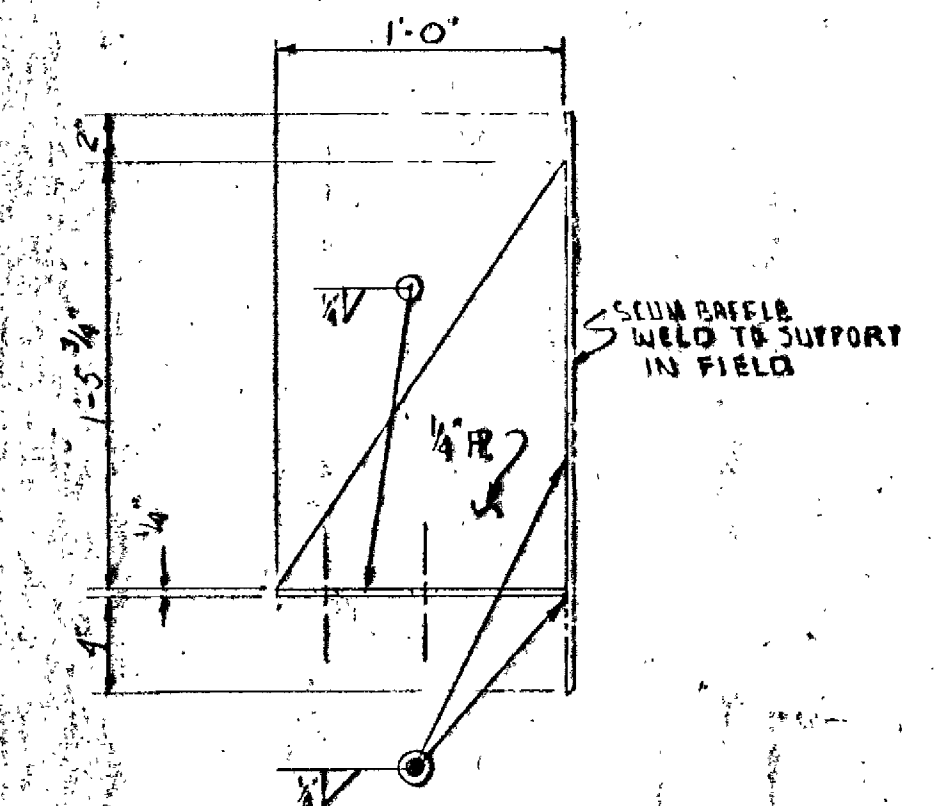
3/4" DIA 2 1/2" LG SLITTED HOLES FOR 3/4" DIA & 2 1/2" LG LINE PLATED HEX HD BOLTS WITH HEX NUTS & LOCK WASHERS



MK 1'S EFFLUENT TROUGH SUPPORTS TWELVE (12) REQUIRED

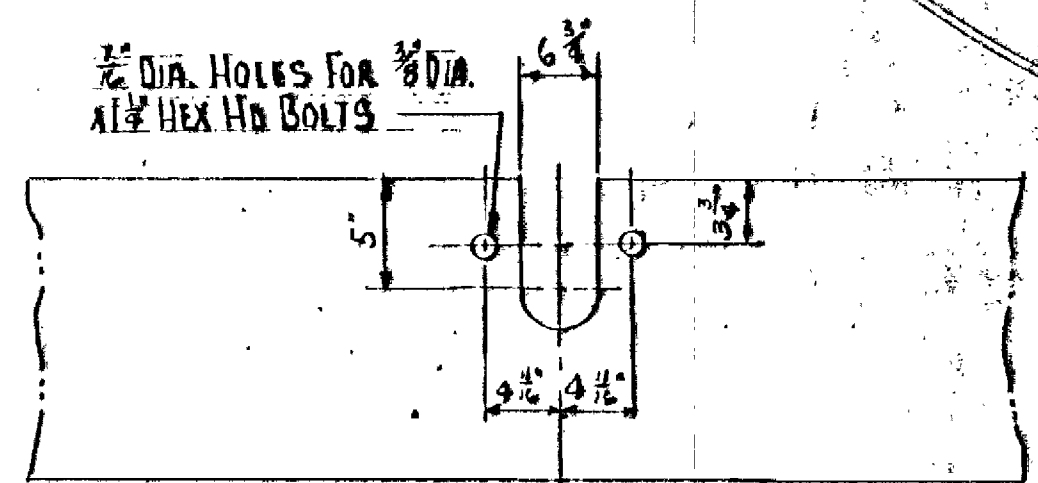


SCUM BAFFLE SPLICE POINTS



SCUM BAFFLE WELD TO SUPPORT IN FIELD

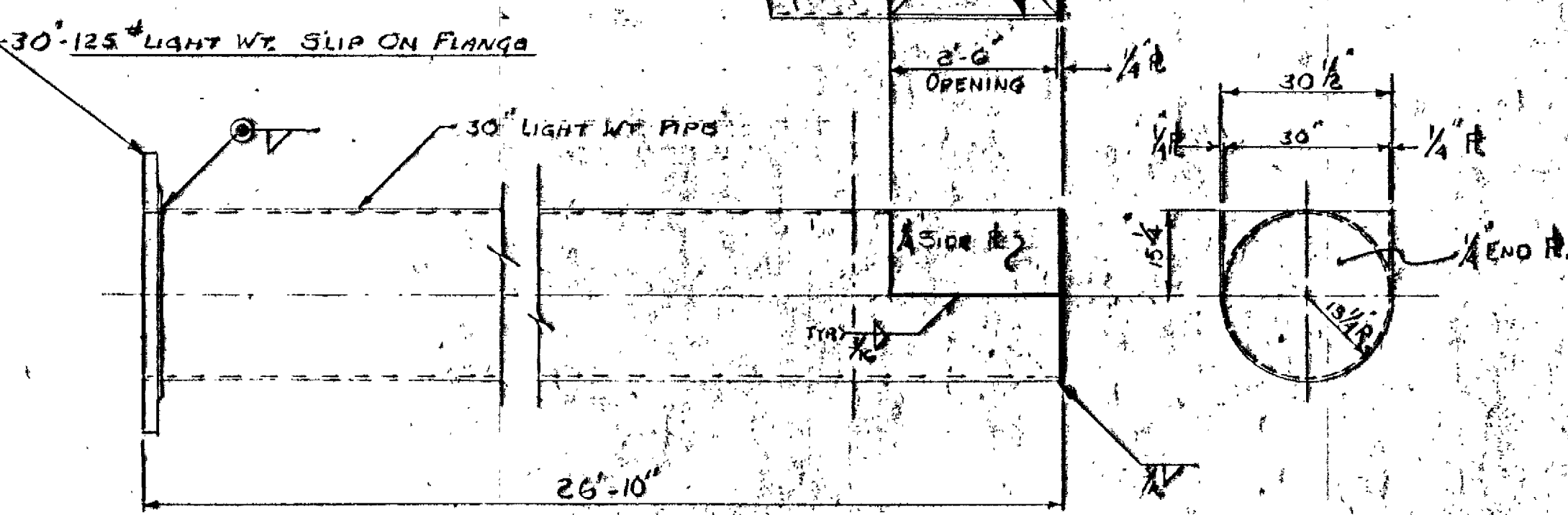
MK B'S SCUM BAFFLE SUPPORTS TWELVE (12) REQUIRED



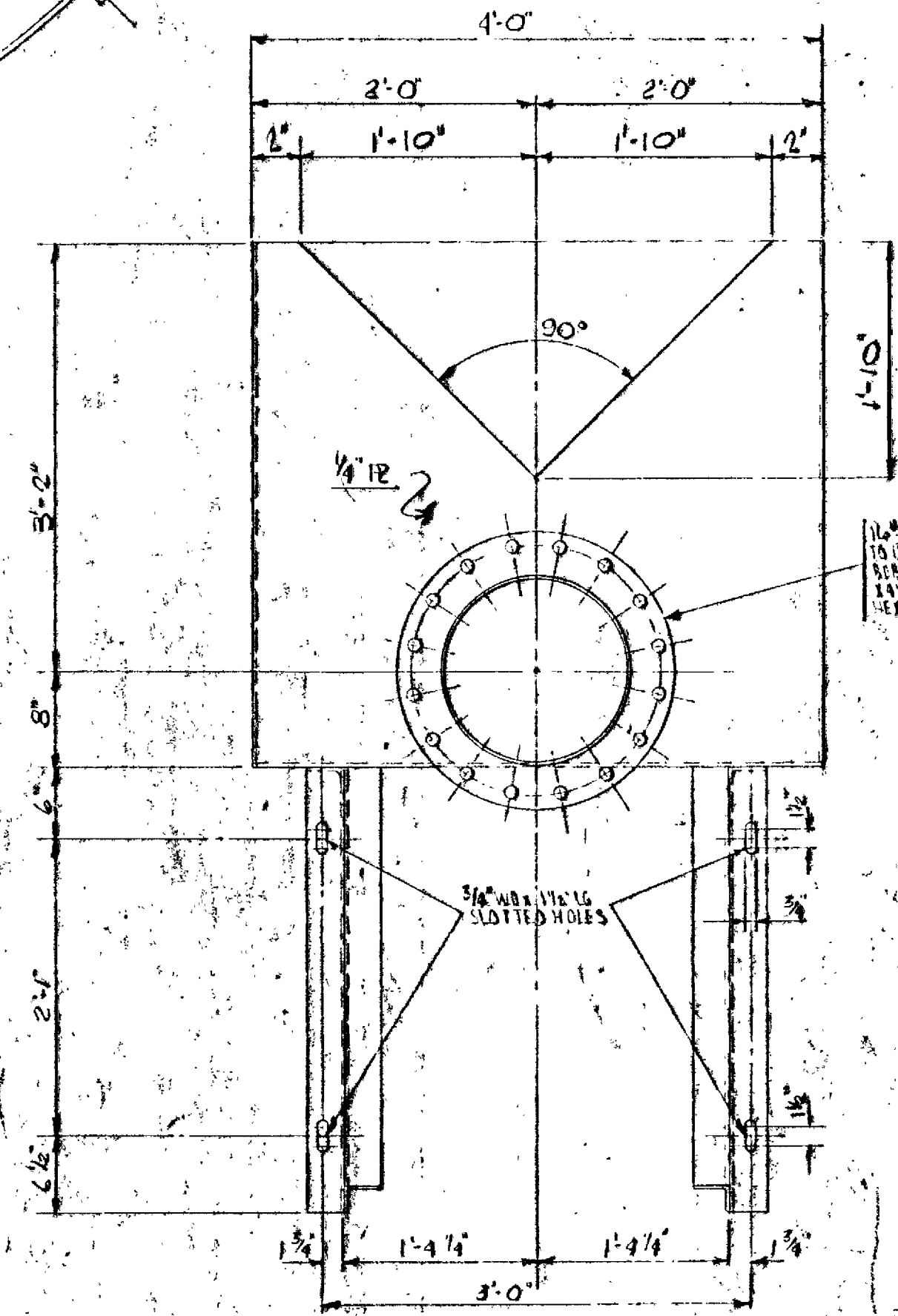
1/2" DIA. HOLES FOR 3/4" DIA. 1 1/2" HEX HD BOLTS

VIEW A-A

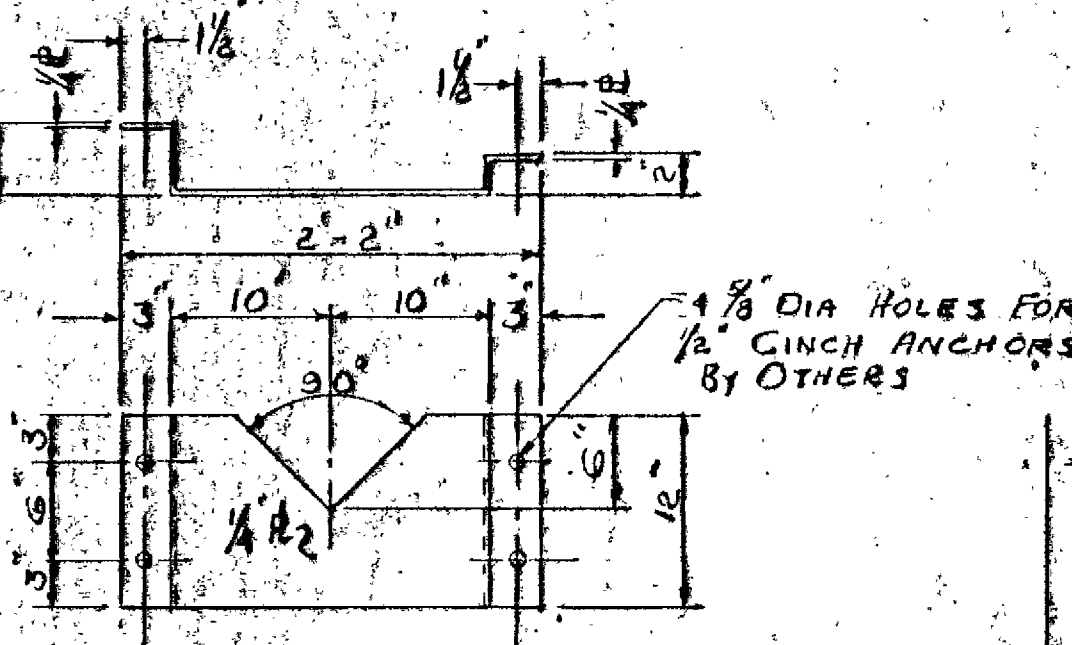
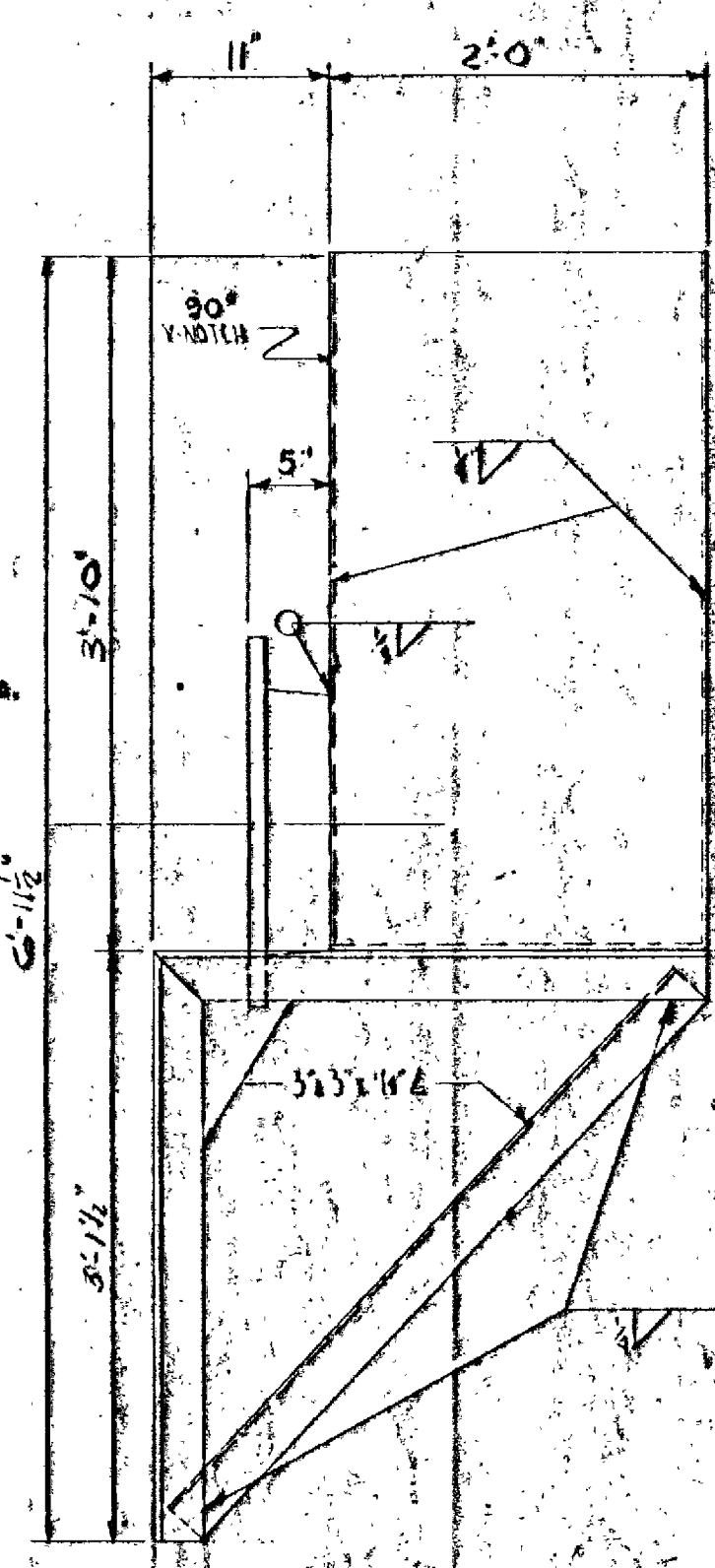
MK B'S SCUM BAFFLES



MK 1'T INFLUENT TRANSFER PIPE



MK E'S EFFLUENT WEIR BOX ONE (1) REQUIRED



AIR HEADER SUPPORT BRKT. MK H'S (18 REQ'D)

ISSUE NO. 4 DATE PRINTED 3-13-69 FOR APPROVAL

NOTE: FOR GENERAL NOTES SEE DWG FM-B

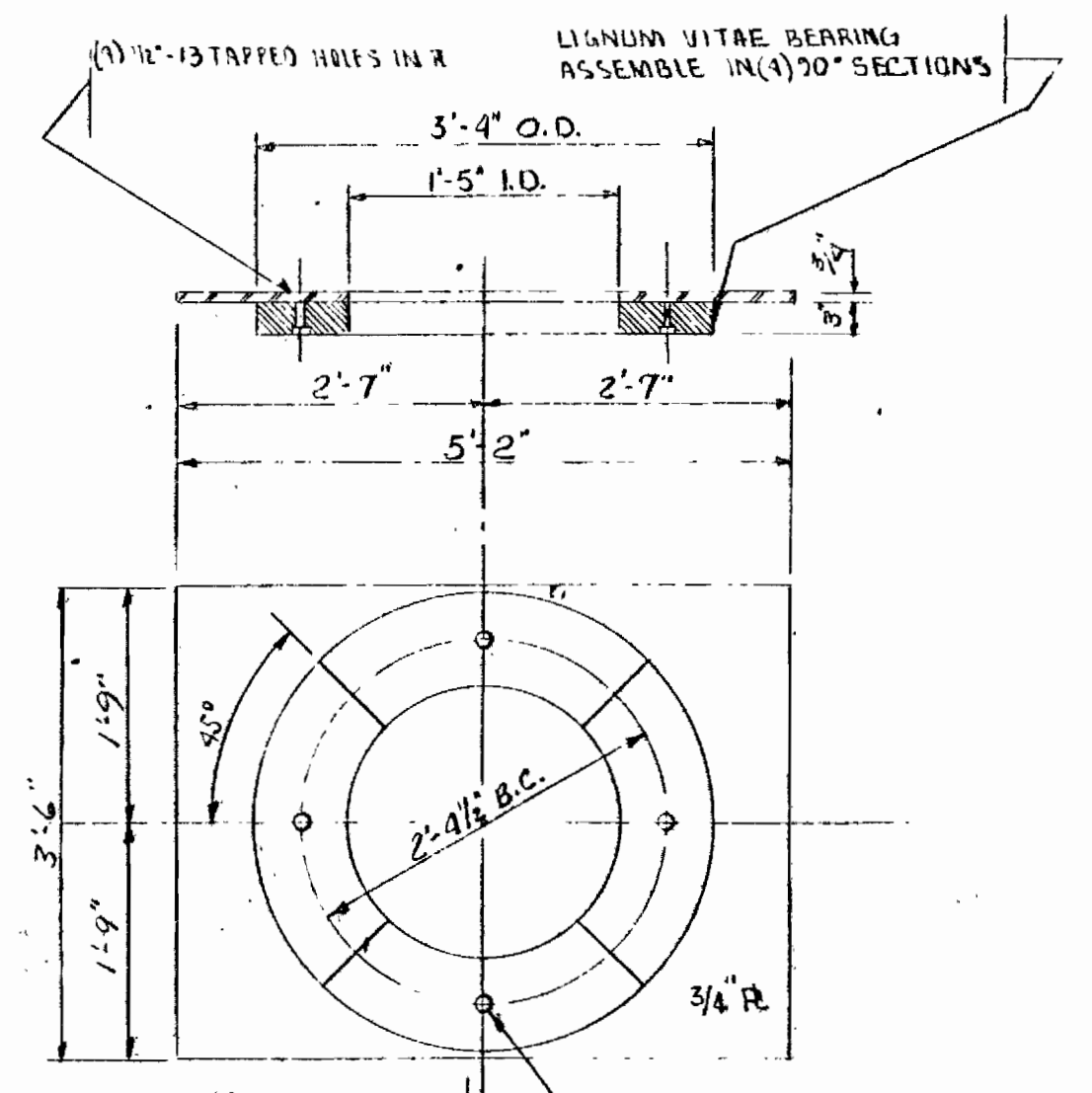
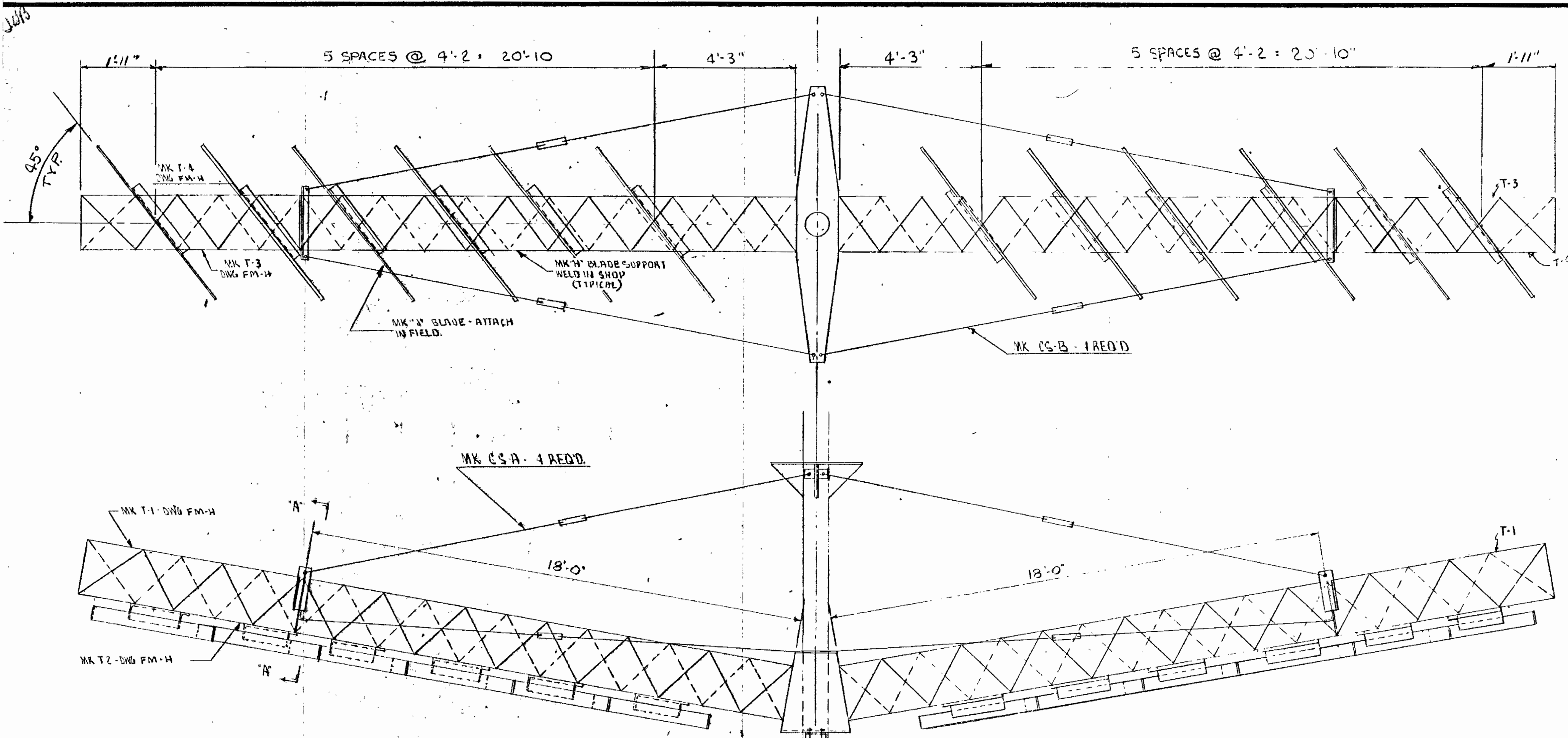
REFERENCE DWGS:
FM-A IMBEDDED ITEMS
FM-B GENERAL ARRANGEMENT
FM-C TROUGH WEIR GASKET ARRGT & DETAILS
FM-L SECTIONAL ELEVATION

DRAGO AEROPACK SEWAGE TREATMENT PLANT HOWARD COUNTY, MARYLAND 2,000,000 G.P.D.
SCUM BAFFLE & MISC. STEEL DETAILS

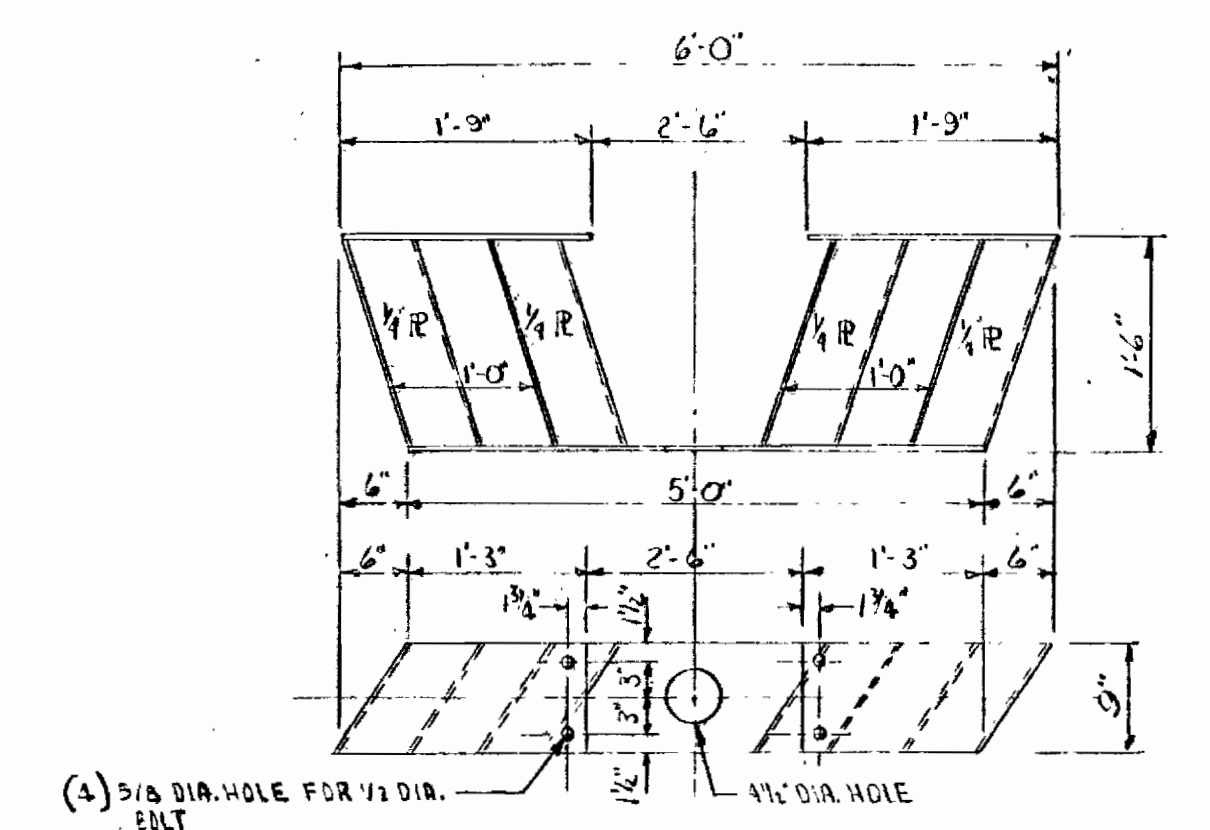
NO.	DATE	DESCRIPTION	BY	CHK	APP'D	REVISIONS
1	3-13-69	REV. SCUM BAFFLE	W.H.R.	W.H.P.		
<p>This drawing, including the information it contains, is the property of Dravo Corporation. It is submitted only in connection with the transaction to which it pertains and must not be used in any manner detrimental to the interests of Dravo Corporation. The drawing is not to be copied and must be returned upon request.</p>						

Dravo

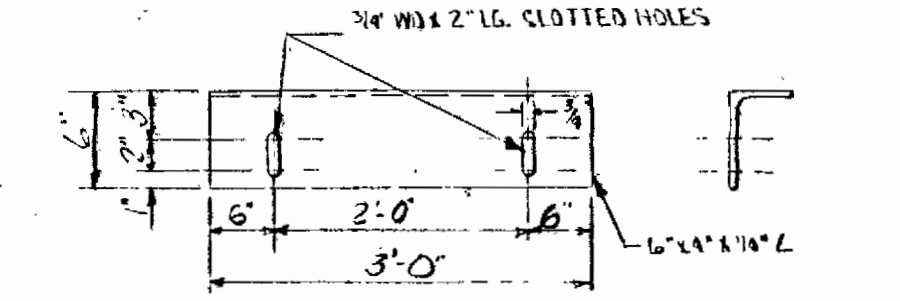
WTA 1023
DRAWING NO.
FM-F



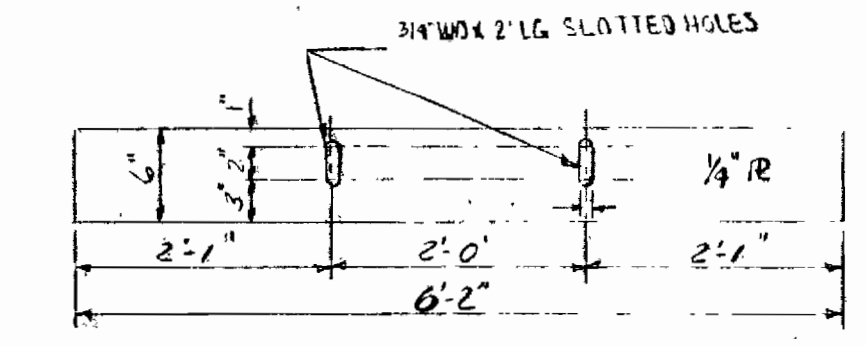
- Δ MK 'F' INFLUENT WELL BEARING PLATE - ONE REQ'D - BY FAB.
- Δ MK 'M' INFLUENT WELL BEARING - ONE REQ'D - BY DRAGO



- Δ MK 'G' BASE AGITATOR ONE REQ'D
- Δ SEE DWG. FM-L FOR LOCATION

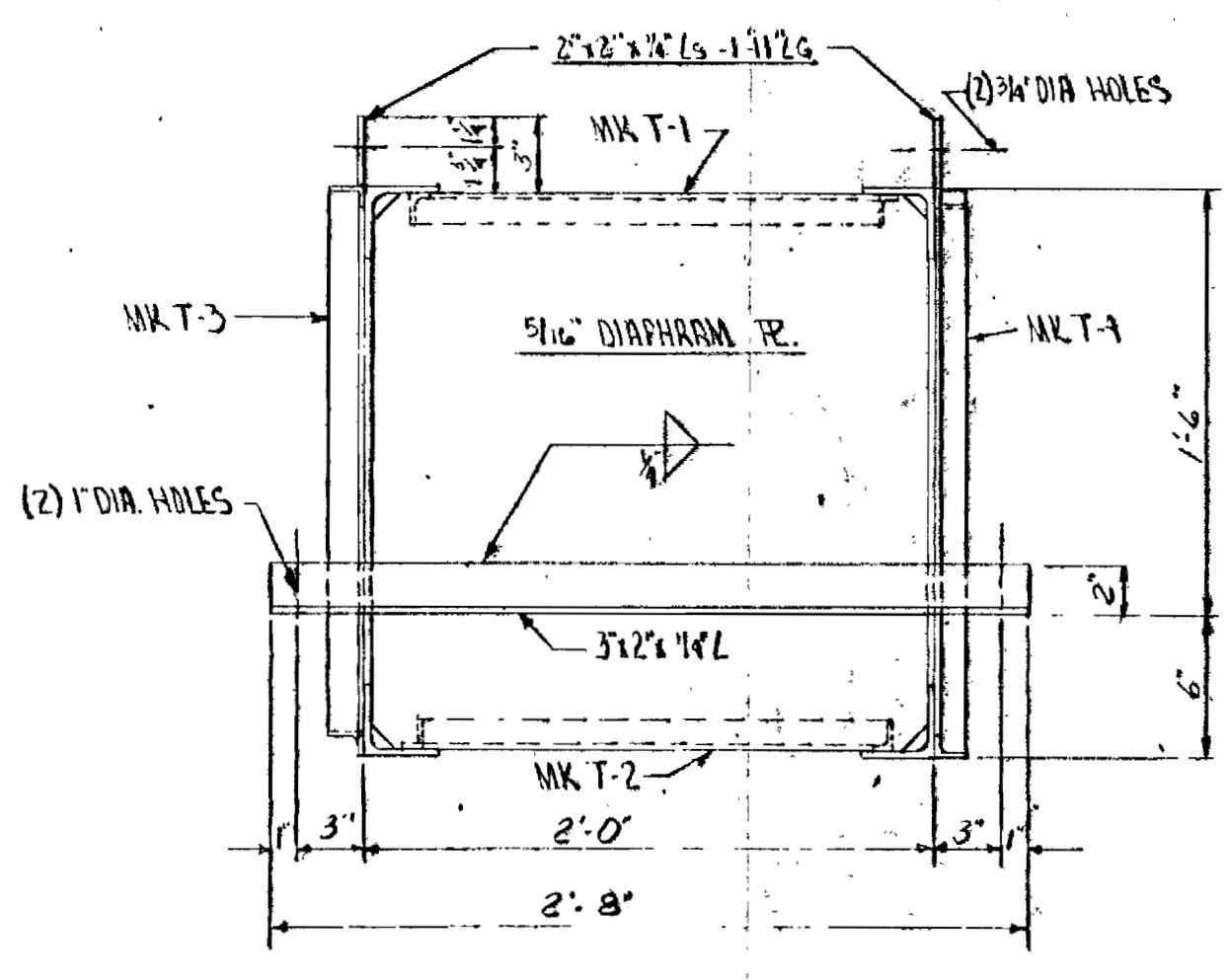


- Δ MK 'H' BLADE SUPPORT 12 REQ'D

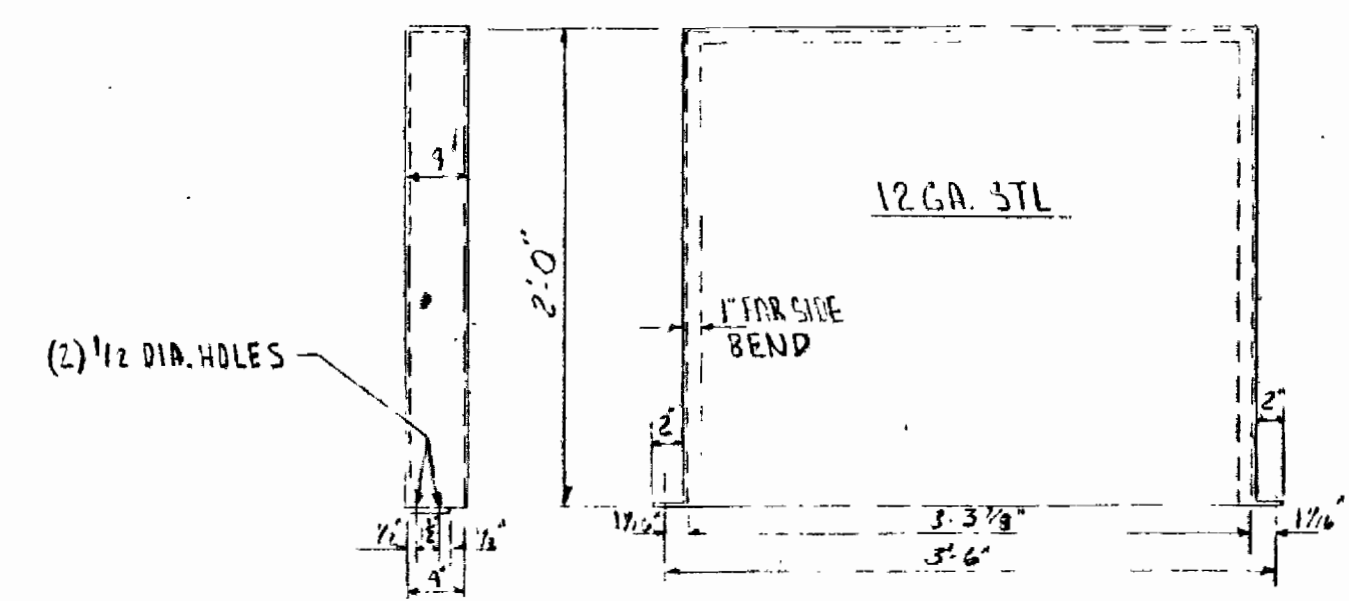


- Δ MK 'J' COLLECTOR BLADE 12 REQ'D

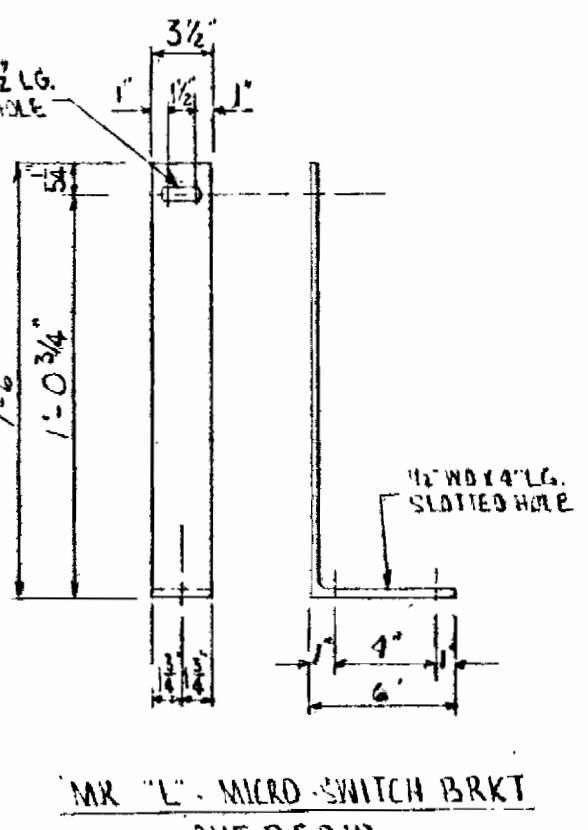
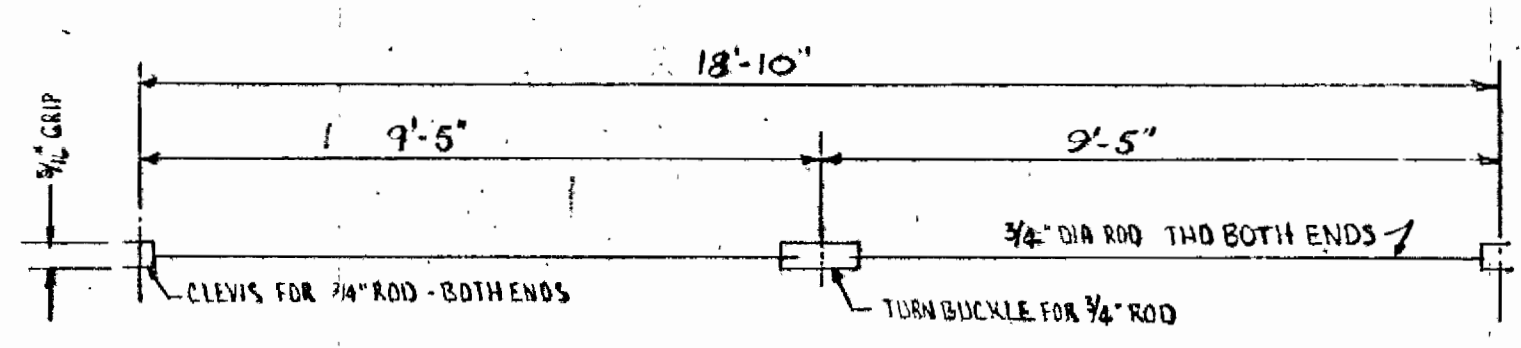
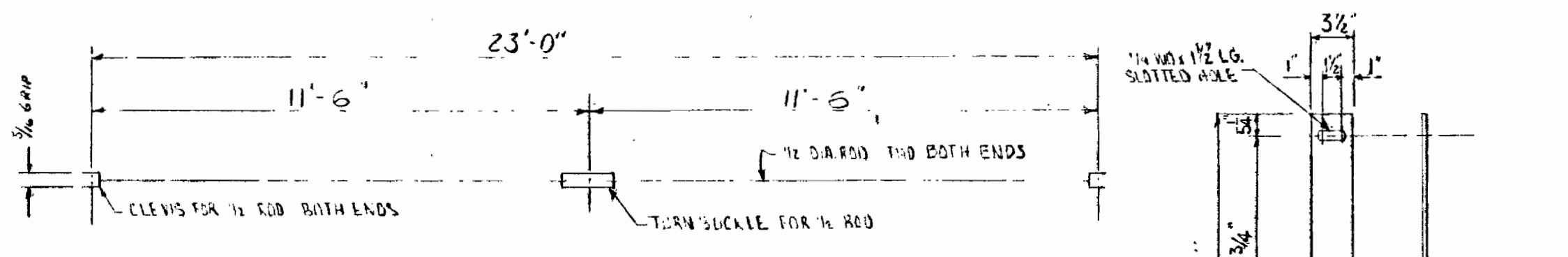
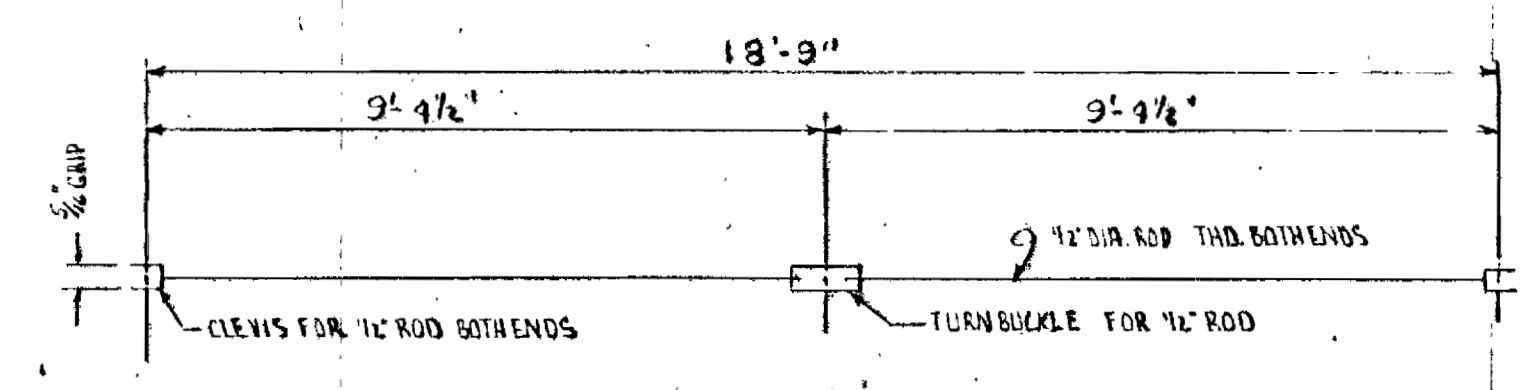
NOTE:
SEE DRAWING FM-B GENERAL ARRANGEMENT FOR PAINTING SPECS.



SECTION 'A-A'
TYPICAL OF BOTH COLLECTOR ARMS



- Δ MK 'K' DRIVE BELT GUARD ONE REQ'D



NO.	DATE	DESCRIPTION	BY	CHK	APP'D
Δ	2-6-69	ADDED 5 BLADES TO COLLECTOR	W.C.	W.M.E.	
Δ	1-21-61	ADDED MK 'M'	W.F.	J.S.	

DRAGO AEROPACK
SEWAGE TREATMENT PLANT
HOWARD COUNTY, MARYLAND
2,000,000 G.P.D.
COLLECTOR ASSEMBLY # DET. 5

SCALE NONE

DRW CH. W.M.E.

SECT. WATER TR.

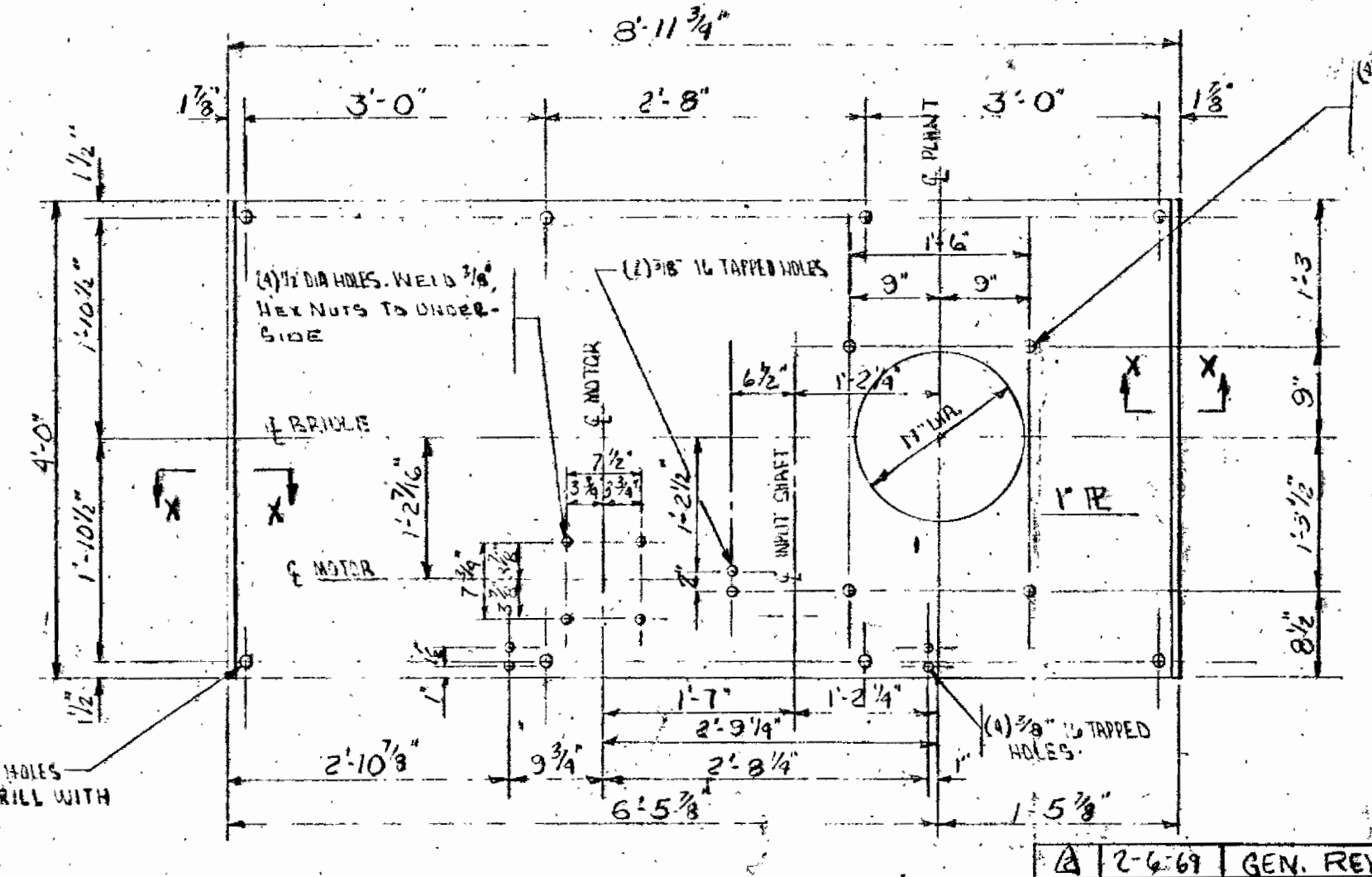
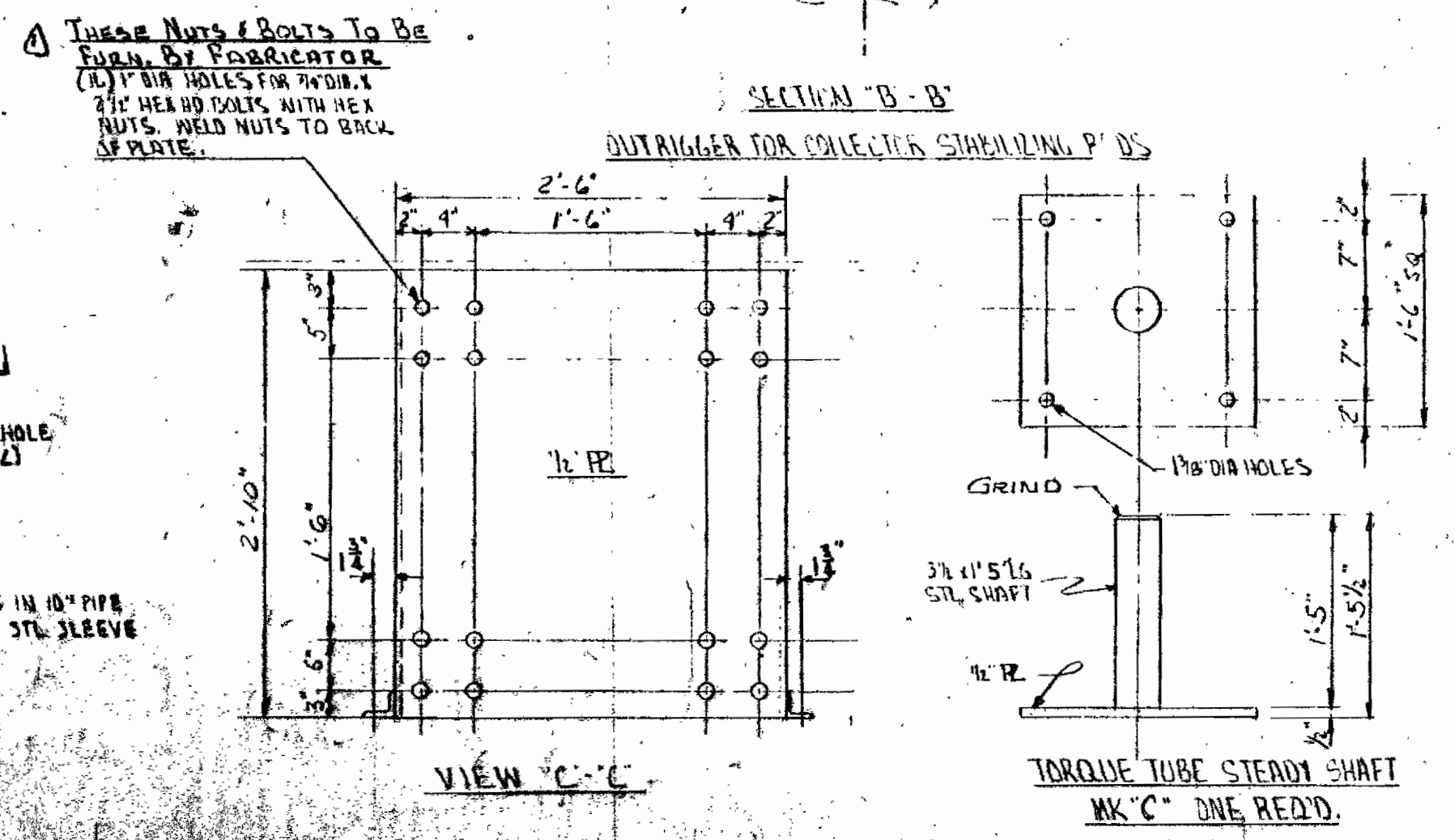
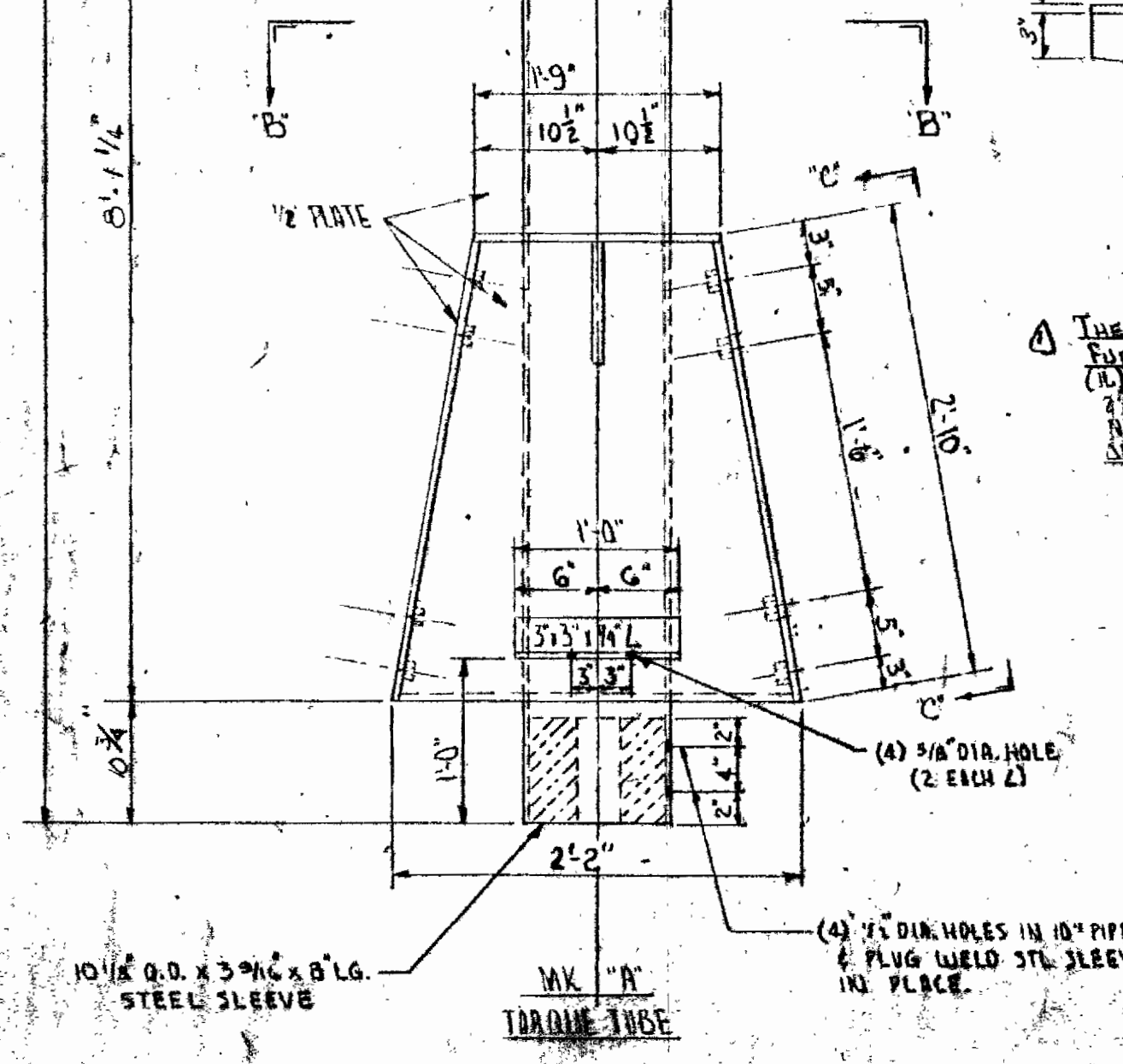
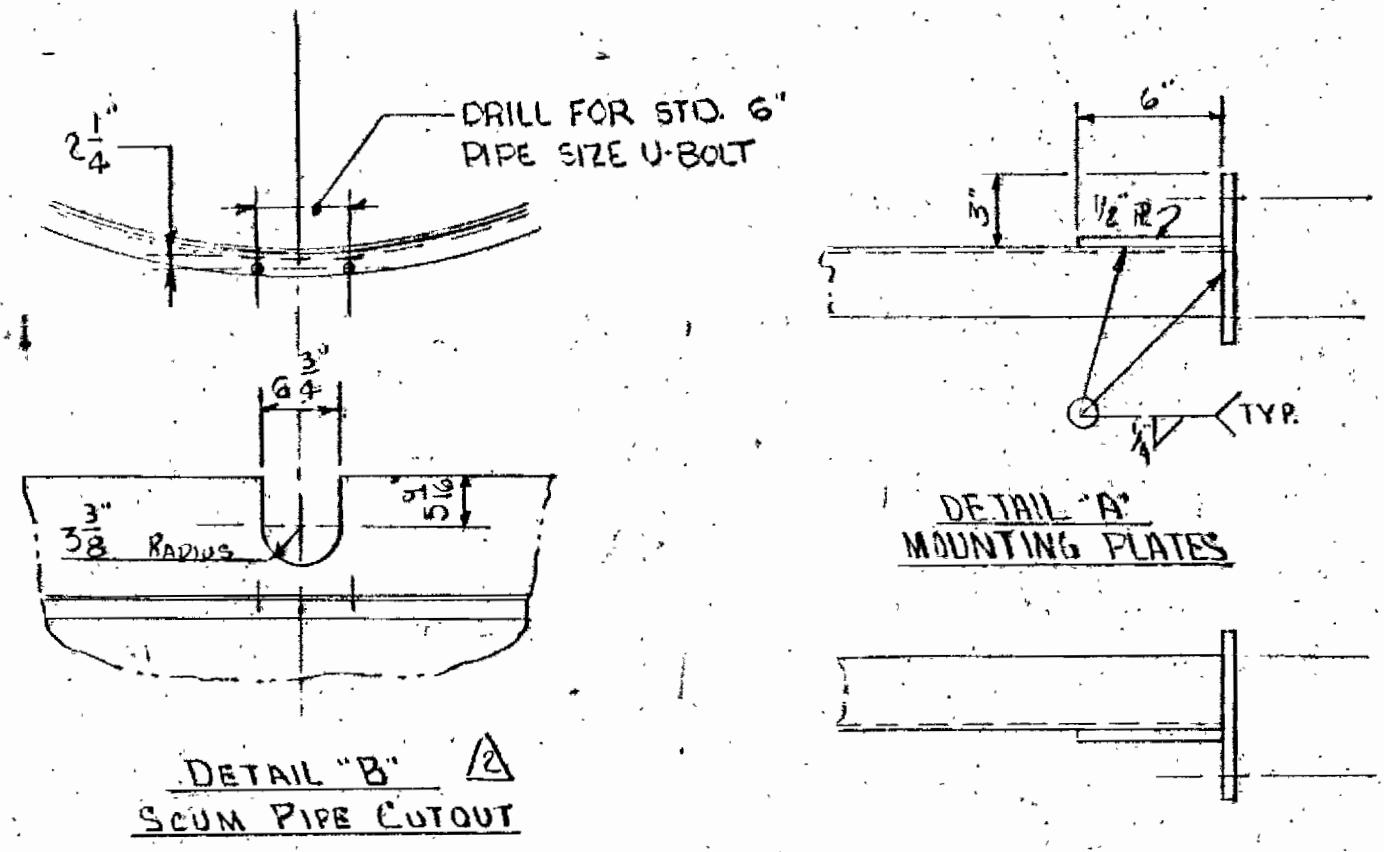
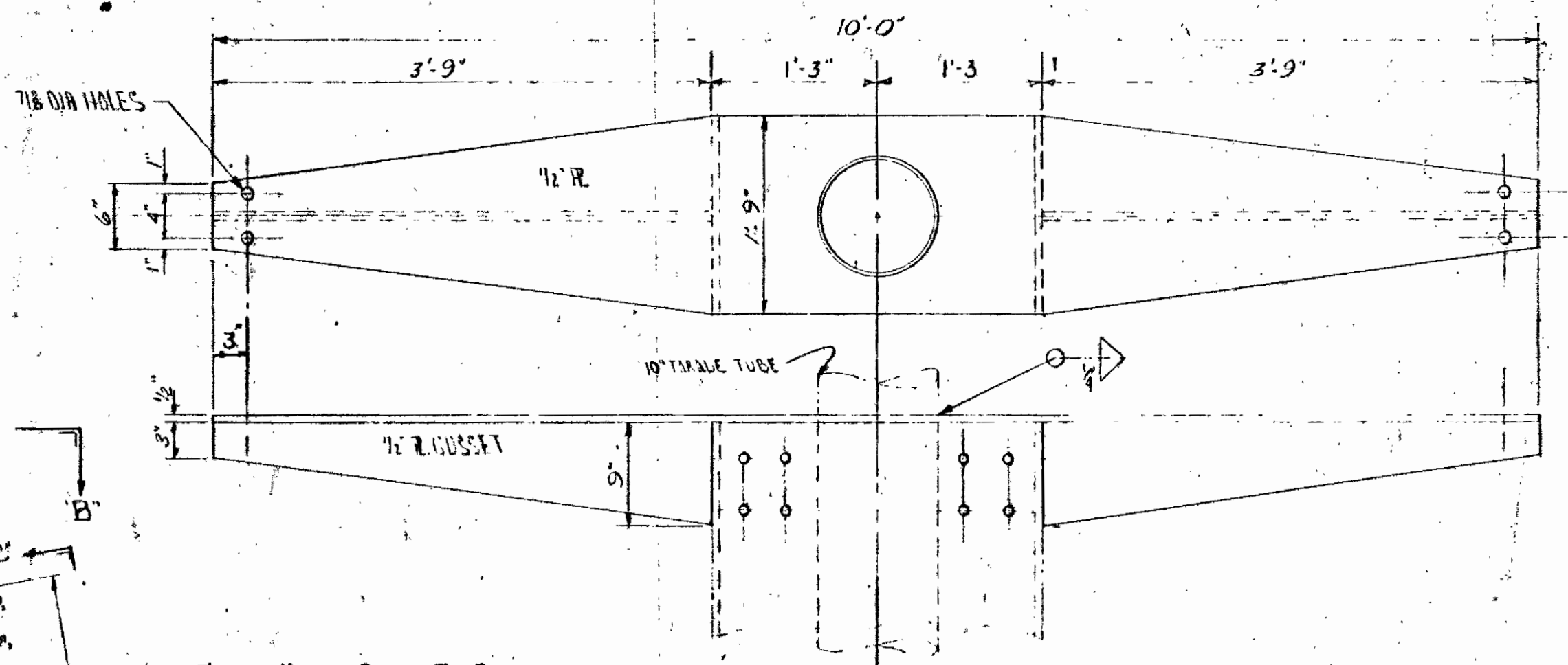
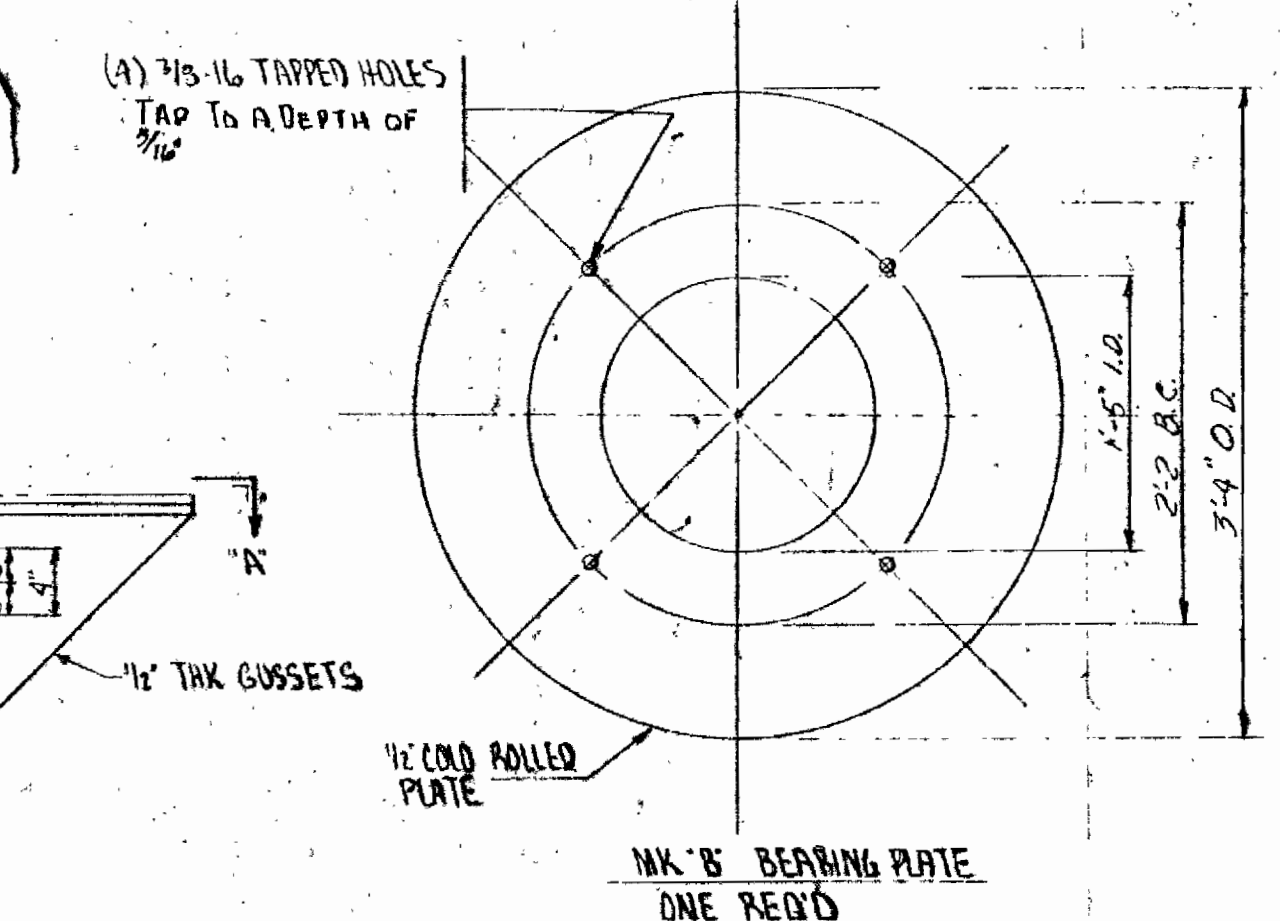
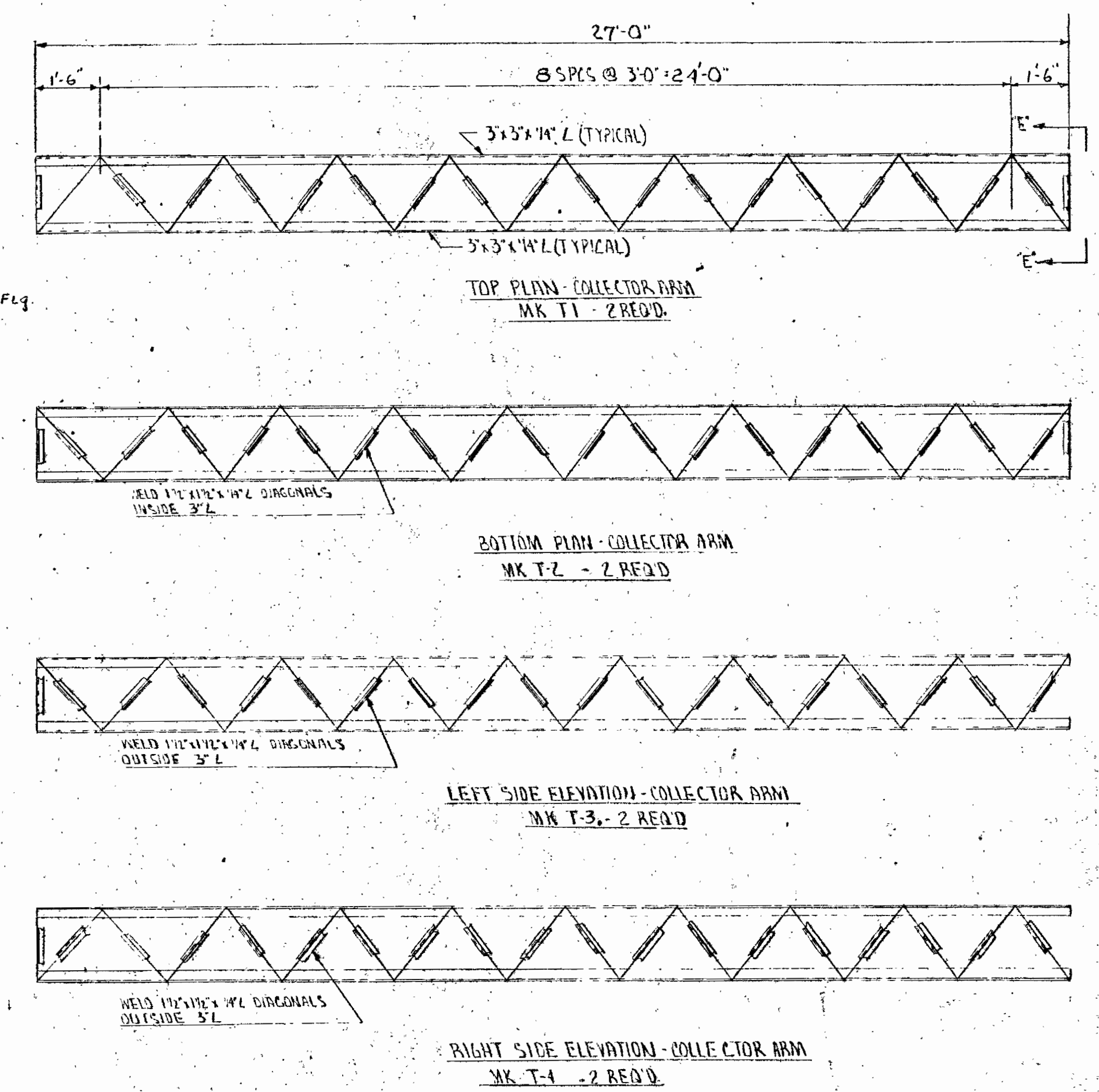
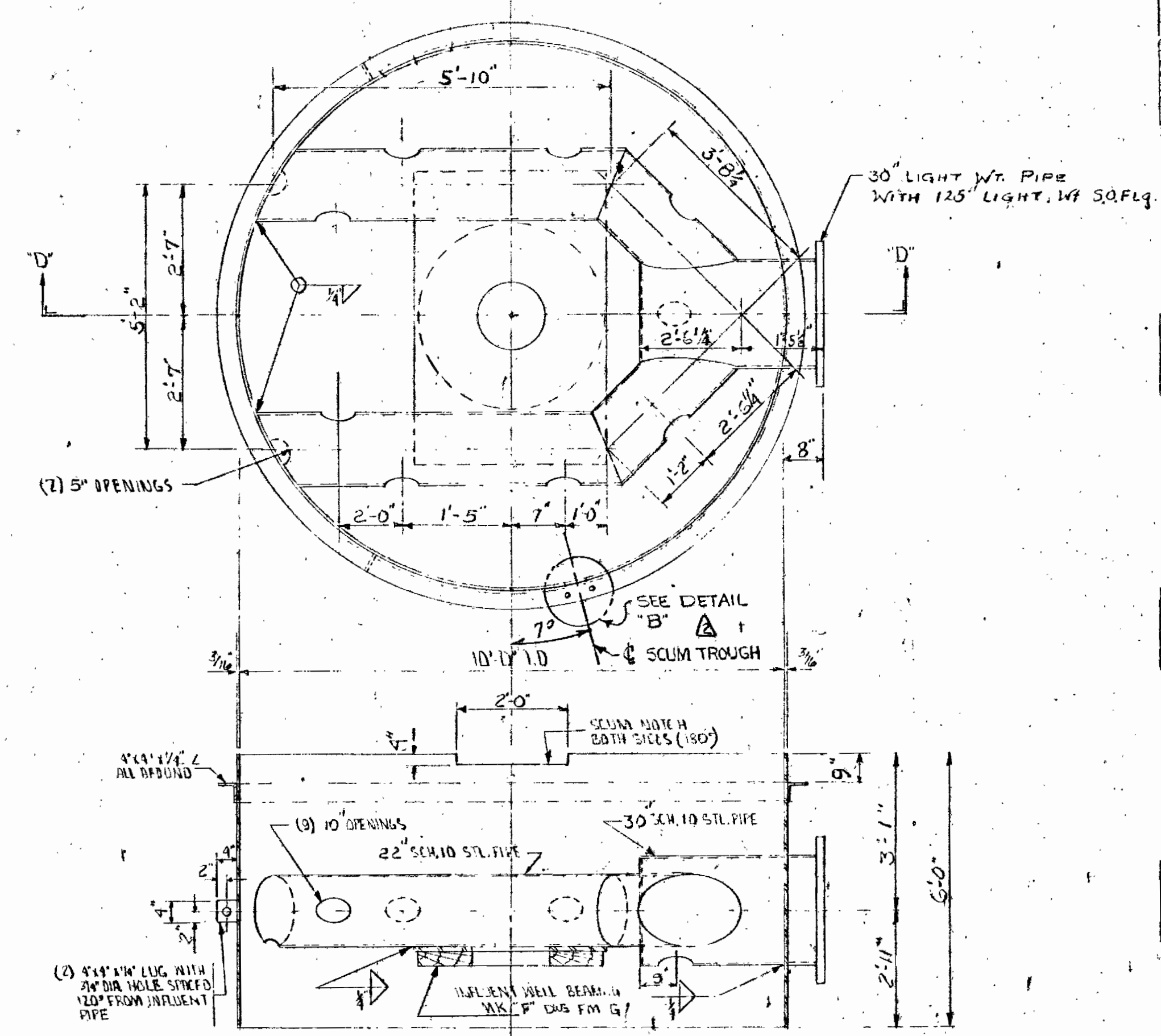
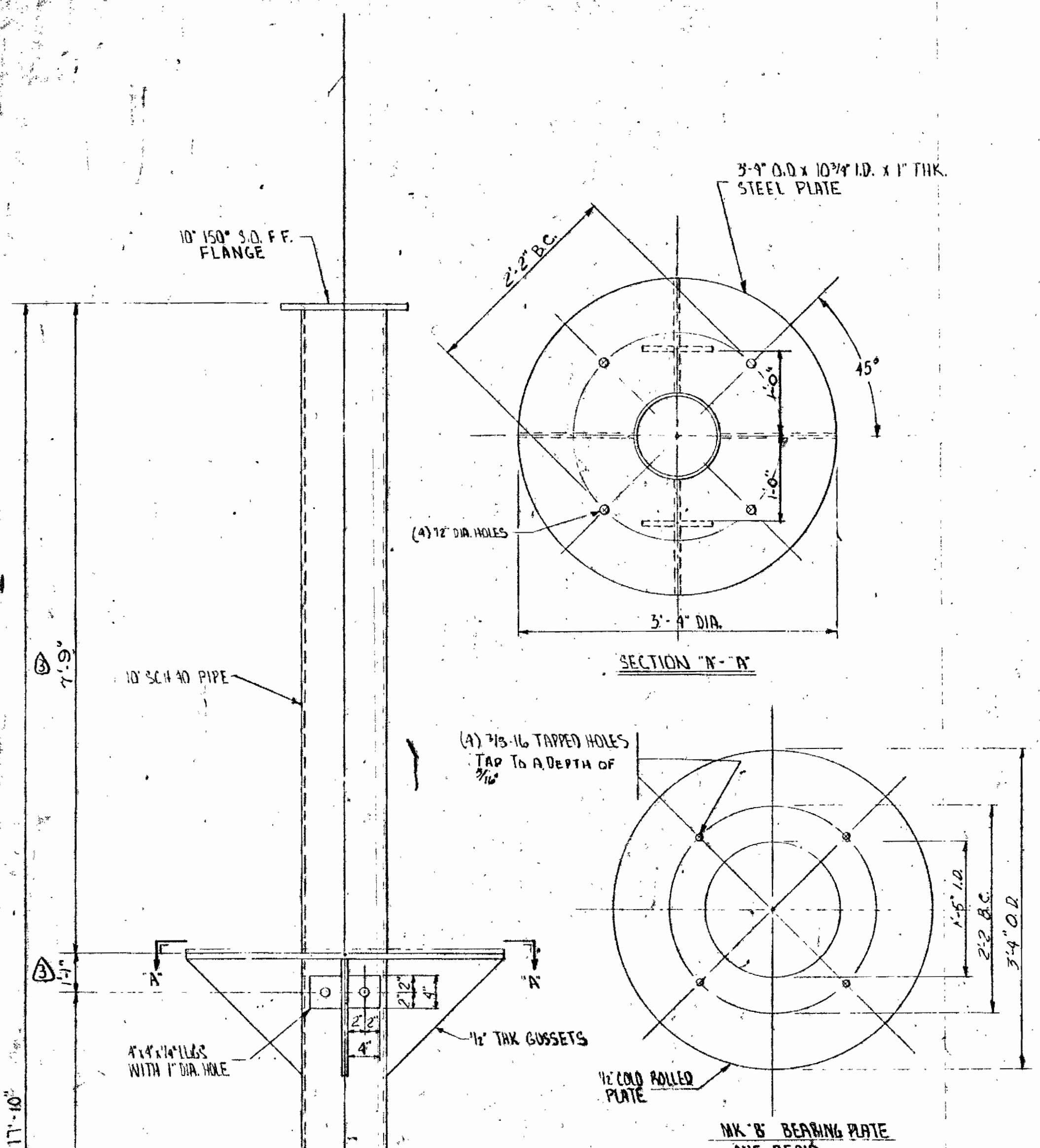
DATE 1-15-69

WTA 1025

DRAWING NO. FM-6

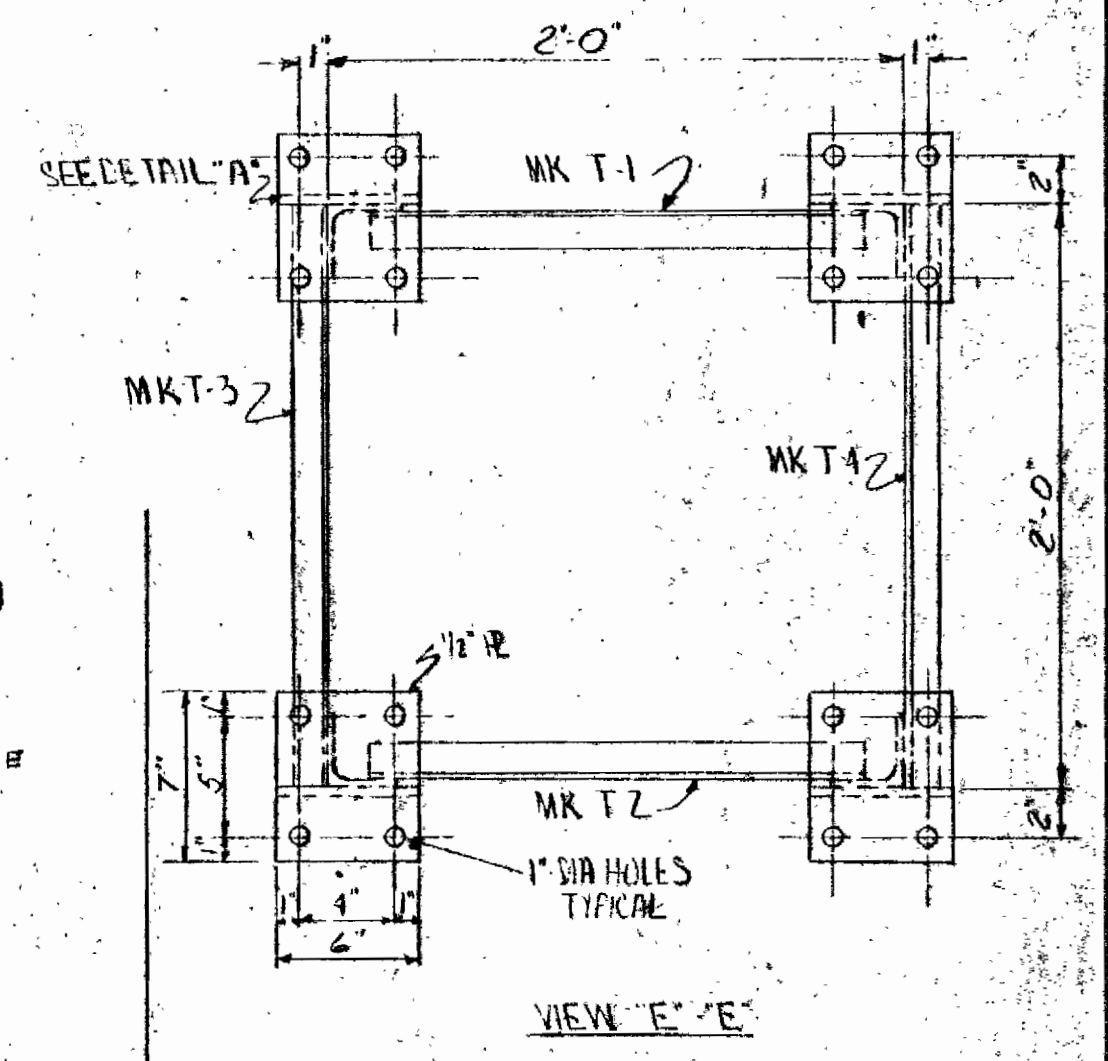
DRAGO CORPORATION, PITTSBURGH, PA. DW

DATE PRINTED 2/20/69



NOTE:
SEE DRAWING FM-B GENERAL ARRGT FOR PAINT SPEC'S.

SECTION X-X



NO.	DATE	DESCRIPTION	BY	CH	APP'D
2-6-69		GEN. REVISIONS			
1-11-69		Added Note	WF	W.C.	

NO. DATE DESCRIPTION BY CH APP'D

REVISIONS

4-3-69 Changed Dim. W.M.F.

DRAYO AEROPACK SEWAGE TREATMENT PLANT
HOWARD COUNTY, MARYLAND
2,000,000 GPD
COLLECTOR DETAILS

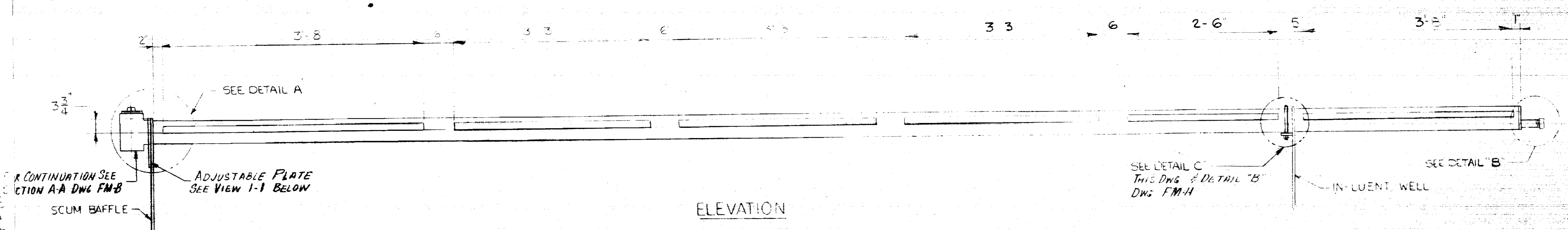
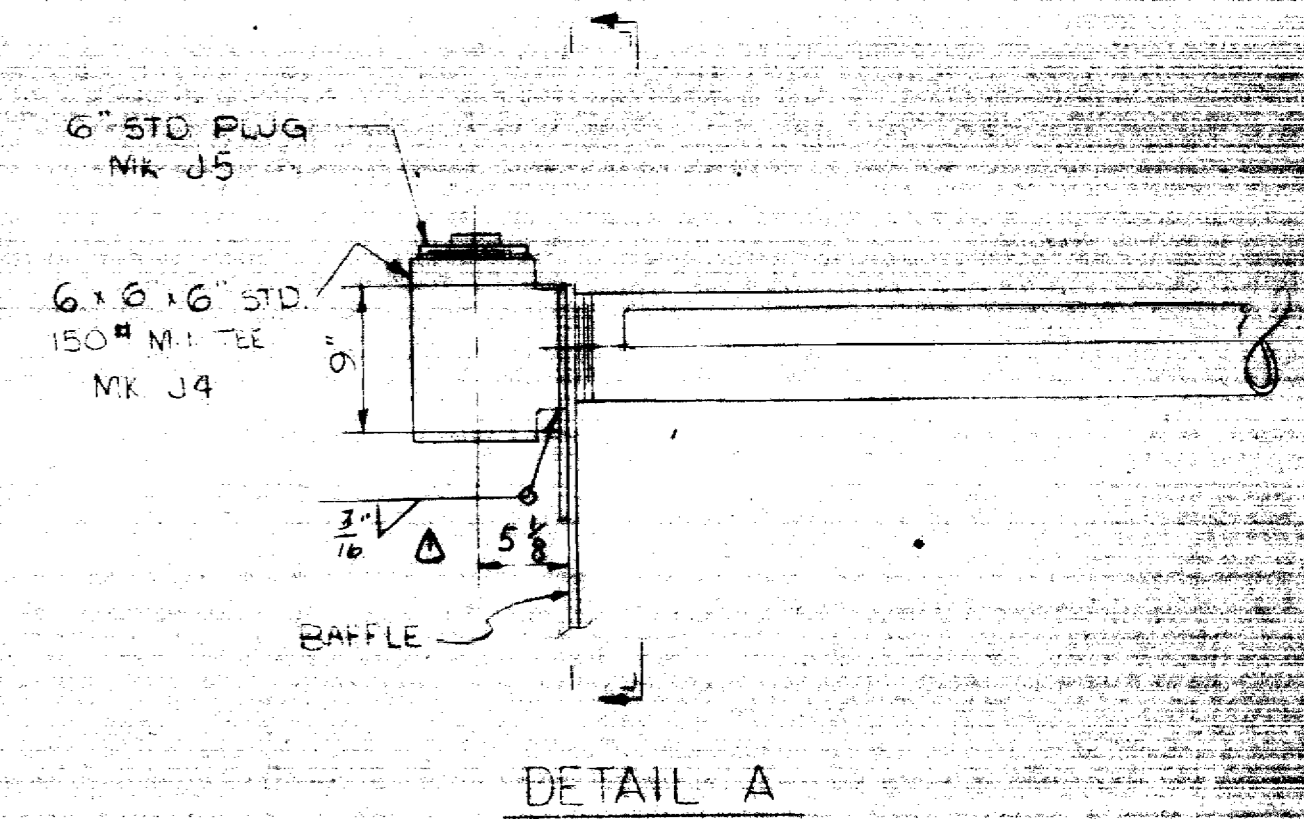
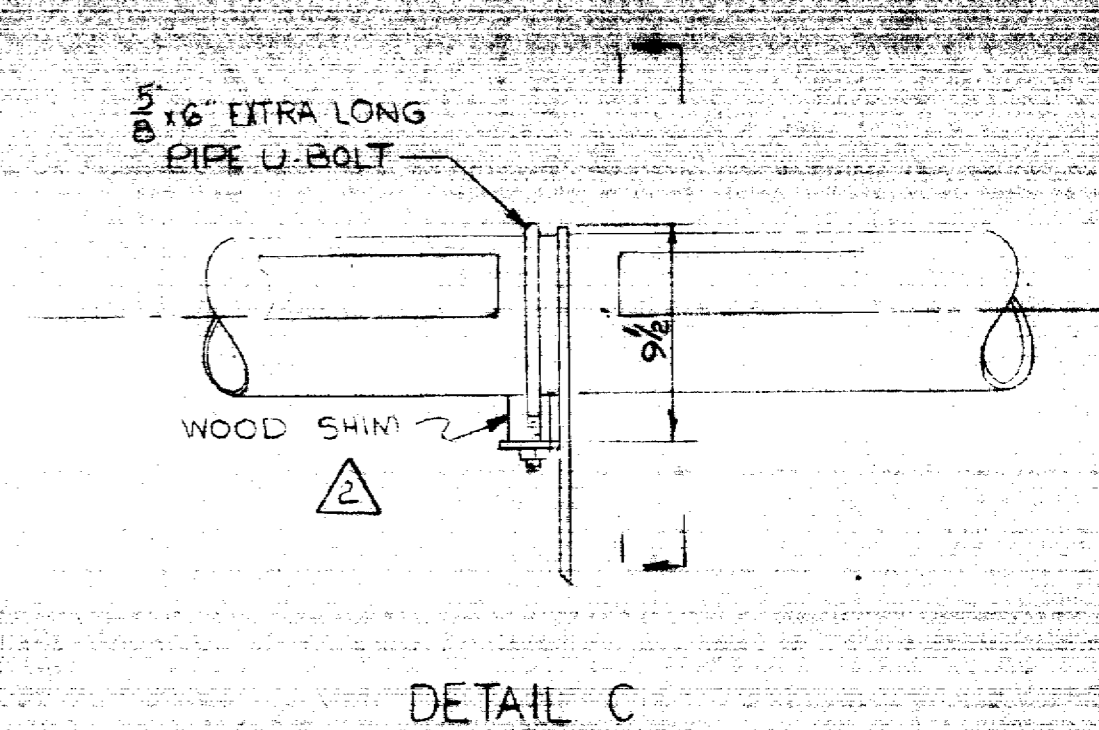
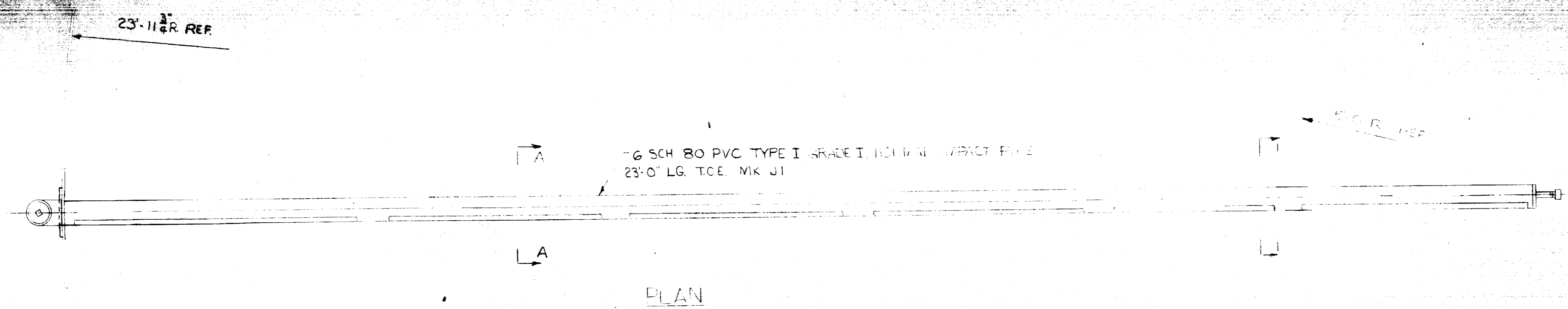
SCALE NONE APP'D *J.F. [Signature]*

DR HWP CH W.M.F. DATE 1-15-67

SECT WATER TR DATE 1-15-67

Dravo WTA 1023 DRAWING NO. FM-H

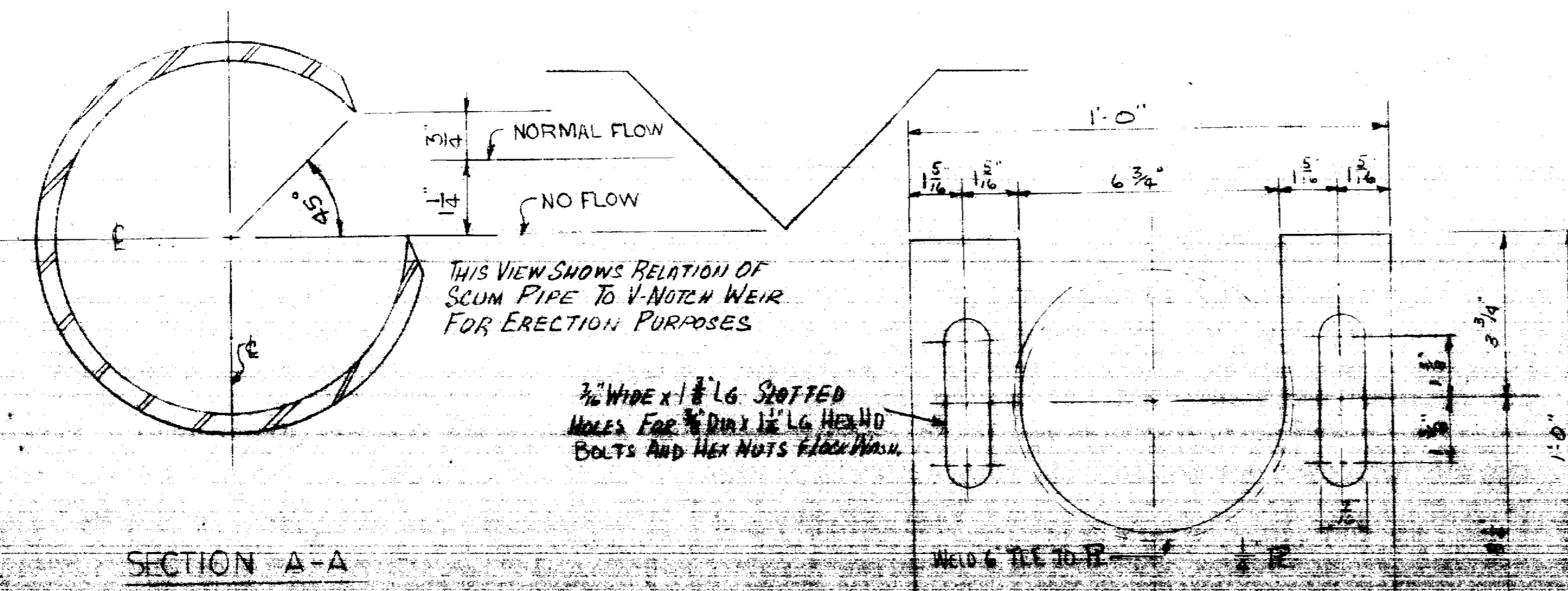
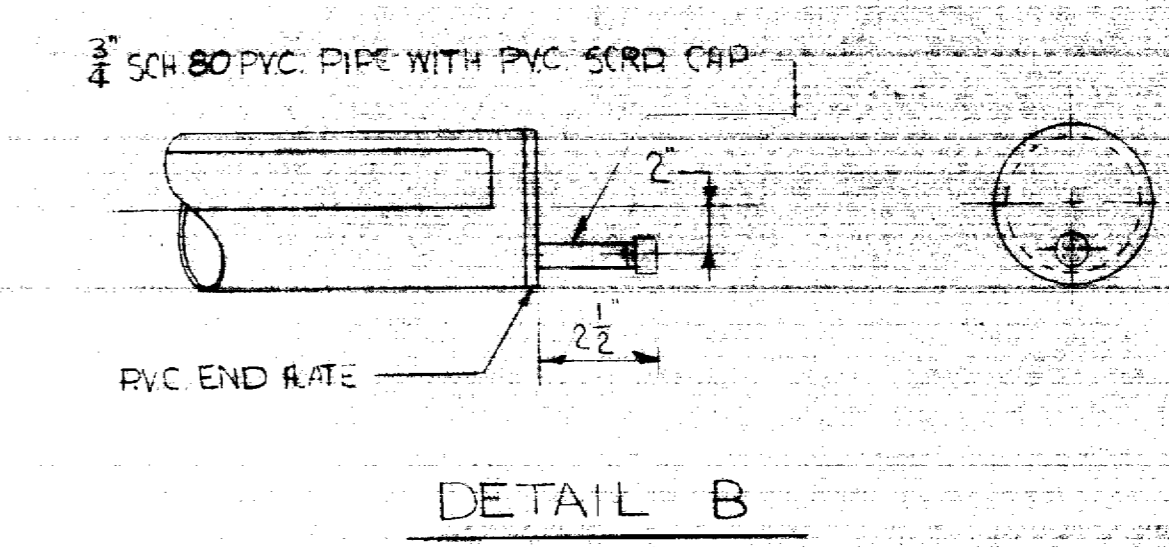
DRAYO CORPORATION, PITTSBURGH, PA. DIV.



CONTINUATION SEE SECTION A-A DWG. FM-B

SCUM BAFFLE

ADJUSTABLE PLATE SEE VIEW 1-1 BELOW

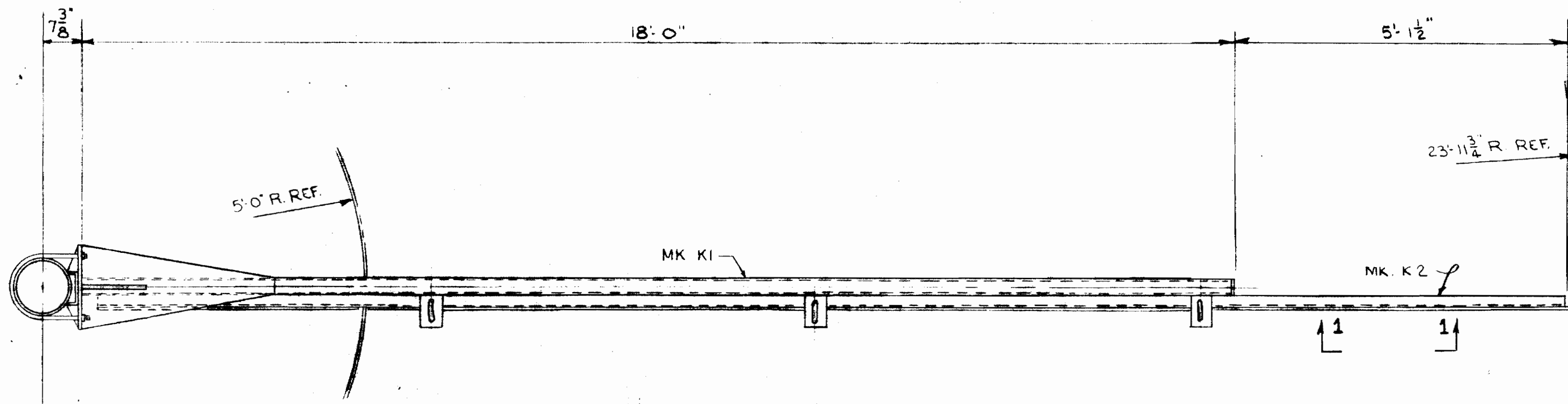


NOTES FOR GENERAL NOTES SEE DWG. FM-B

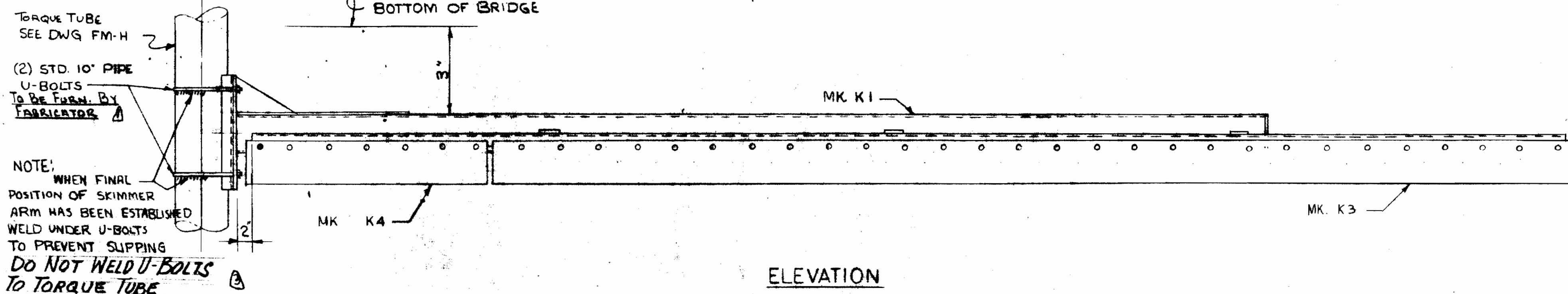
1	10-27-67	PREPARED BY	
2	10-27-67	CHECKED BY	
3	10-27-67	DESIGNED BY	
4	10-27-67	APPROVED BY	

DR. PVC AIR PUMP
SEWAGE TREATMENT
HOWARD COUNTY

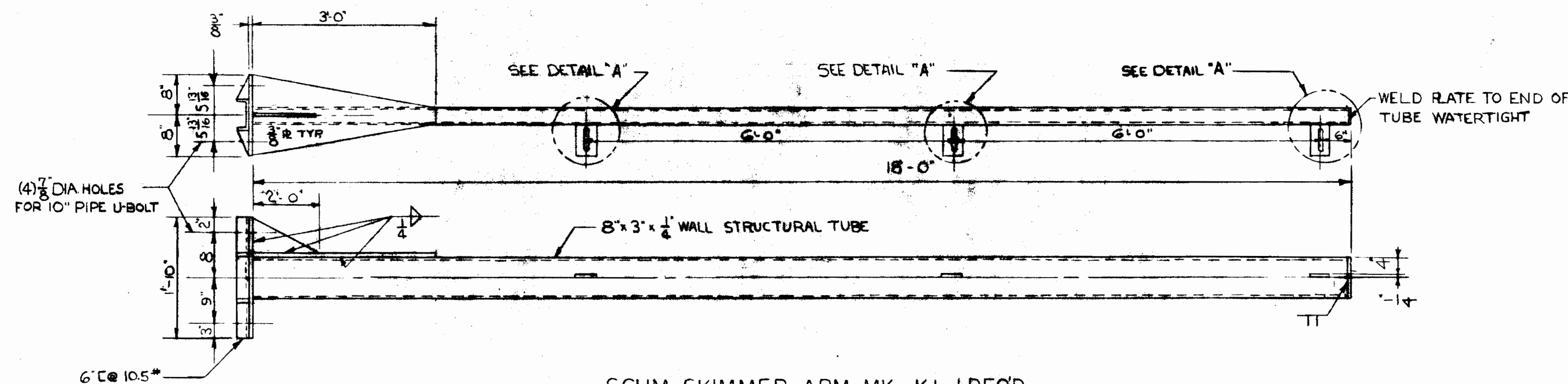
WS 231-517



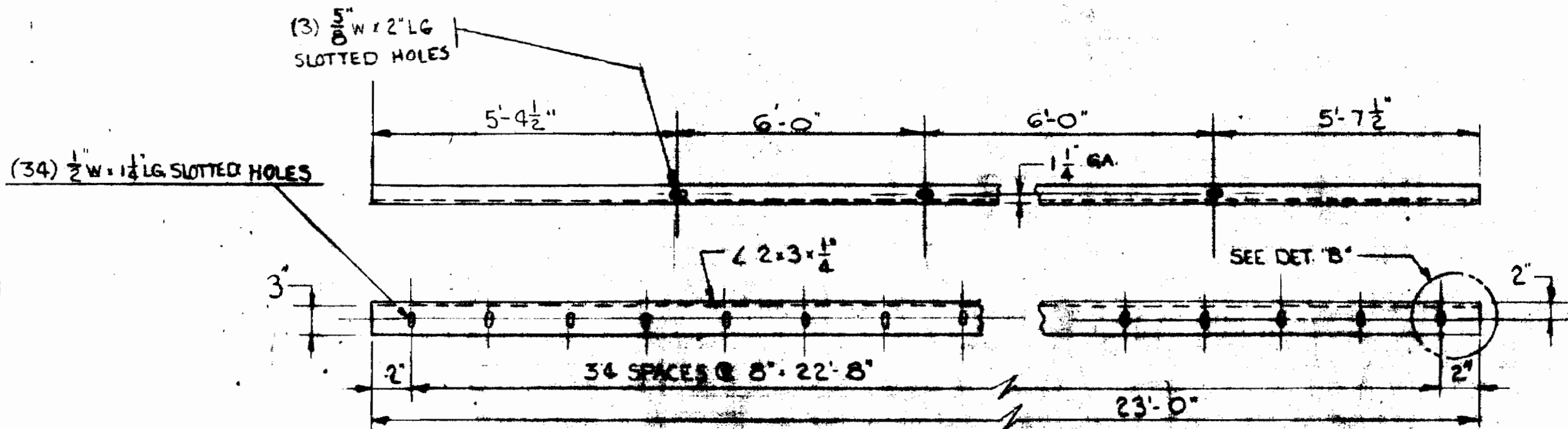
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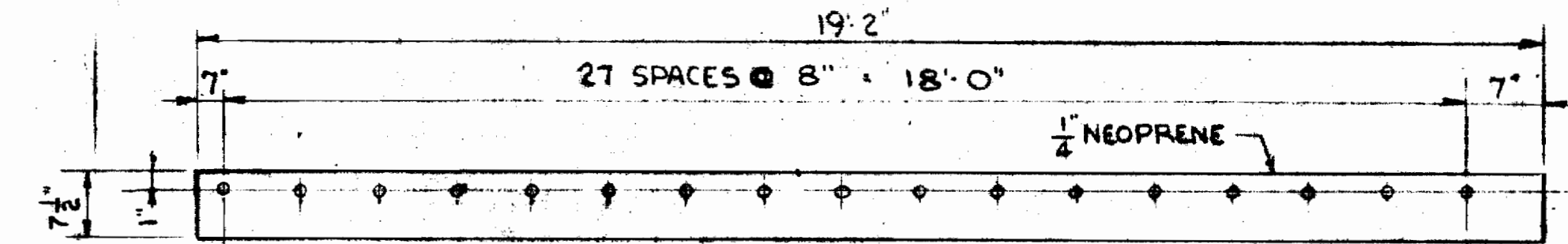
SCUM SKIMMER ASSEMBLY



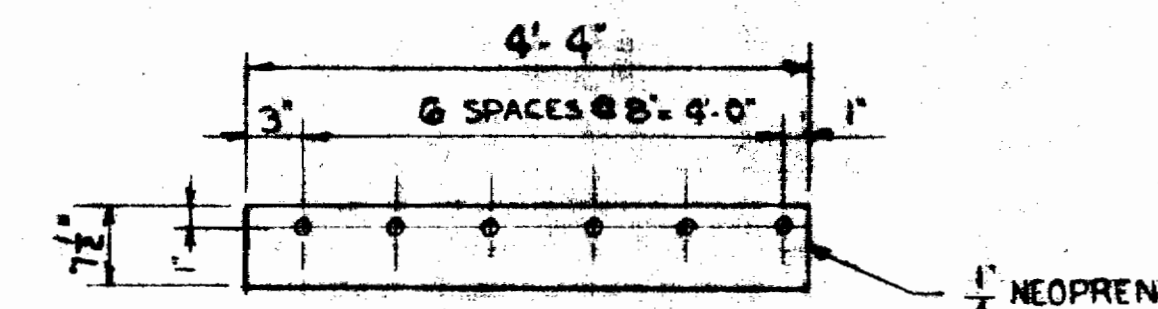
SCUM SKIMMER ARM MK. K1 I REQ'D.



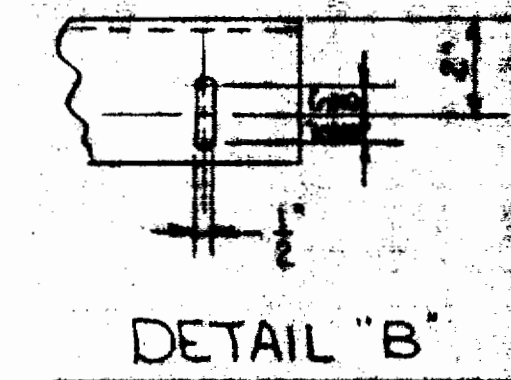
WIPER BLADE SUPPORT ANGLE MK. K2 I REQ'D.



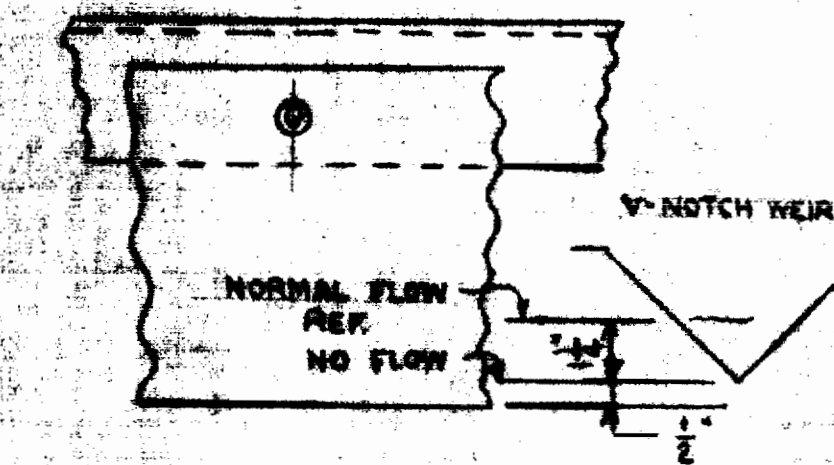
WIPER BLADE MK. K3 I REQ'D.



WIPER BLADE MK. K4 I REQ'D.

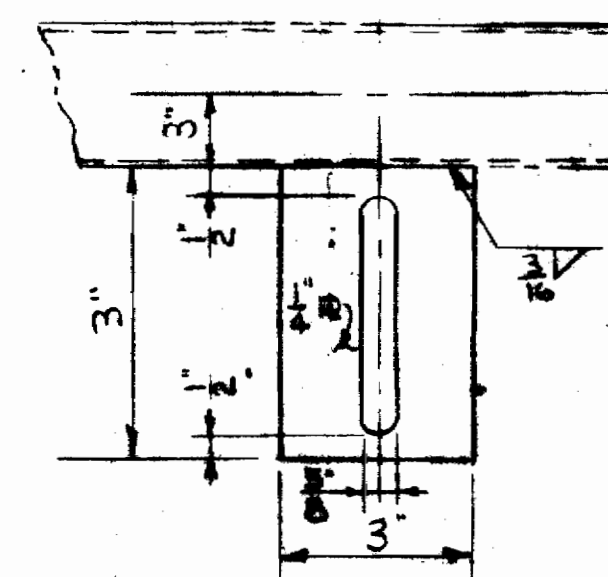


DETAIL B



VIEW 1-1

NOTES:
FOR GENERAL NOTES SEE DWG. FM-B
NEOPRENE TO BE 50 SHORE A DUROMETER



DETAIL A
TYP. OF 3

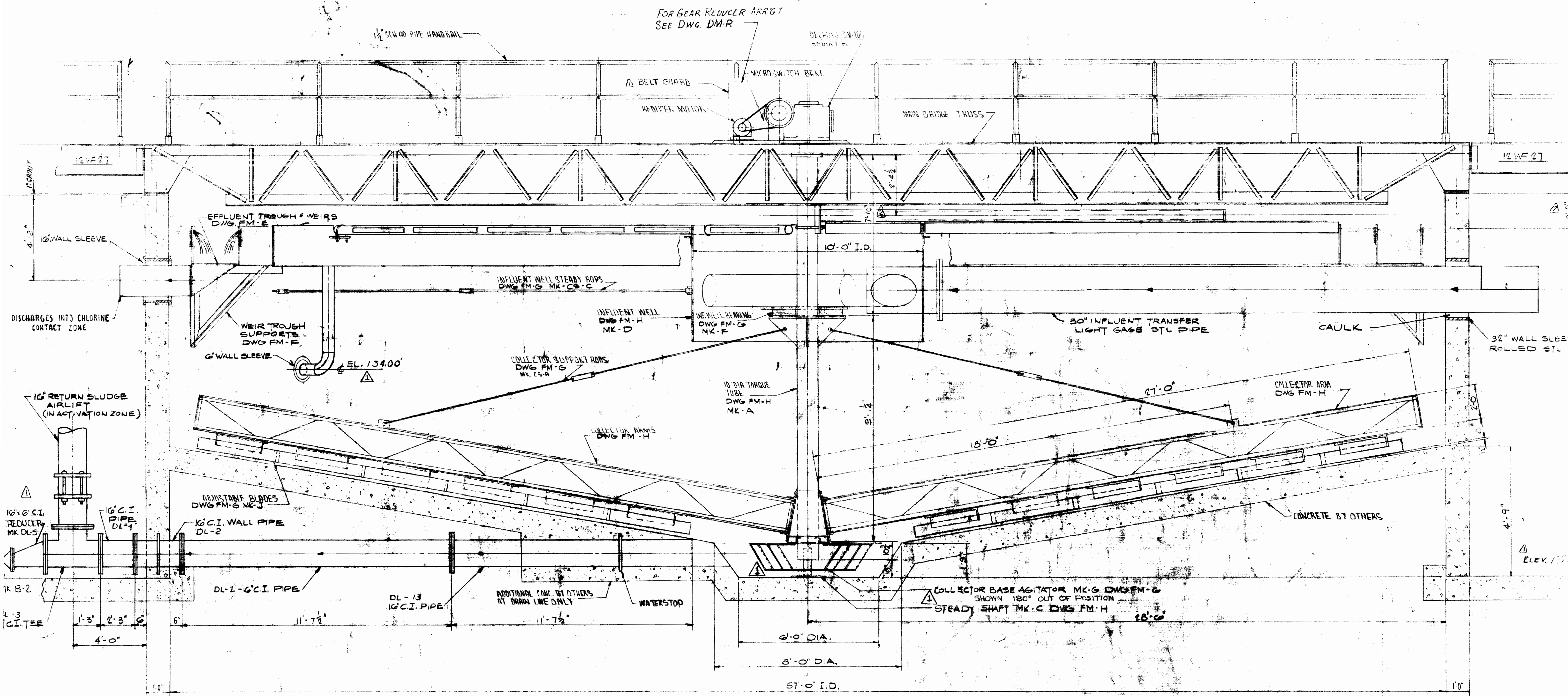
ISSUE 10 DATE PRINTED 5-18-69

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NO.	DATE	DESCRIPTION	BY	CHK	APP'D														
1																			
<p>ISSUE 10 DATE PRINTED 5-18-69</p>				<p>REGT. WATER TR</p>		<p>DATE 1-15-69</p>													
<p>DRAWING NO. FM-K</p>				<p>WFA 102</p>		<p>DRAWING NO. FM-K</p>													

DRAWO AEROPACK
SEWAGE TREATMENT PLANT
HOWARD COUNTY, MARYLAND
2000,000 G.P.D.
SCUM SKIMMER DETAIL

Dravo

237-S/K

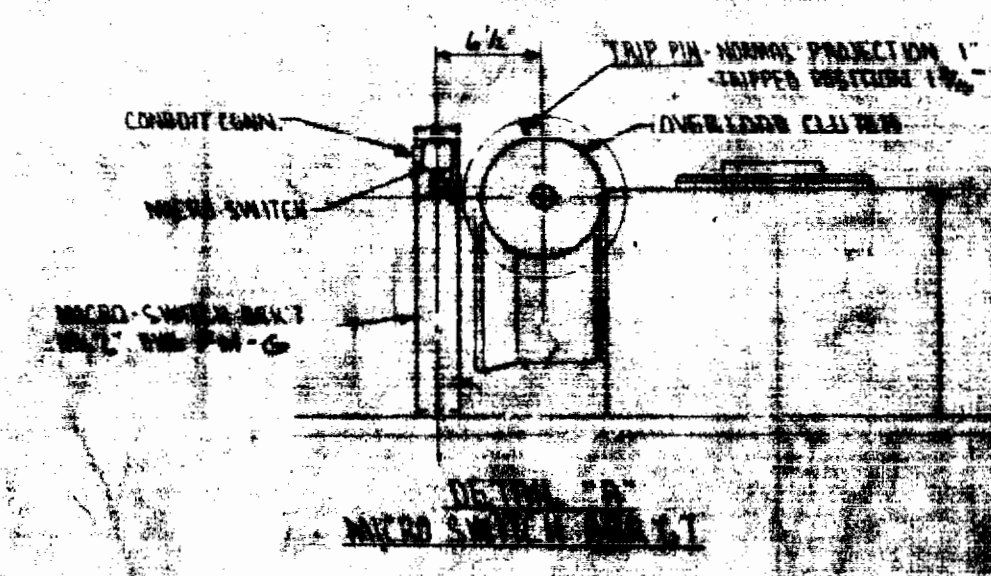


CLARIFIER ASSEMBLY INSTRUCTIONS

1. BOLT EFFLUENT TROUGH SUPPORTS TO TANK WALL.
2. SET EFFLUENT TROUGH SECTIONS IN PLACE ON SUPPORTS AND WELD SECTIONS TOGETHER.
3. CHECK FOR PROPER CLEARANCE, LEVEL & ALIGNMENT AND WELD TO SUPPORTS.
4. SET V-NOTCH WEIR PLATES TO PROPER ELEV. - 2 1/2" TOP OF TANK TO BOTTOM OF V-NOTCH.
5. BOLT SCUM BAFFLE SUPPORTS TO TRUSS BRACKETS.
6. WELD SCUM BAFFLE TO SUPPORTS AS SHOWN ON DRAWING FM-F WITH TOP OF BAFFLE SET AT 1/4" FROM TOP OF TANK.
7. CHECK FOR ALIGNMENT AND PROPER CLEARANCE ALL AROUND AND TIGHTEN BOLTS.
8. SET SCUM PIPE IN PLACE AND WELD TO SCUM BAFFLE.
9. SET TORQUE TUBE BOTTOM STEADY BEARING IN PLACE BEING CAREFUL THAT IT IS NOT OFF CENTER. LEAVE BOLTS LOOSE AT THIS TIME.
10. PLACE BASE AGITATOR OVER STEADY SHAFT.

11. SET TORQUE TUBE IN PLACE AND BLOCK.
12. SET INFLUENT WELL AND BEARING ASSY OVER TORQUE TUBE BEING LIGHTLY CONTACTING BEARING WITH GREASE, ALLOWING IT TO REST ON TORQUE TUBE BEARING PLATE.
13. SET MAIN TRUSS IN PLACE AND ANCHOR.
14. SET BEARING ON DRIVE BASE PLATE AND BOLT DOWN BEARING BOLTS LOOSE.
15. ATTACH TORQUE TUBE TO REDUCER OUTPUT FLANGE.
16. CHECK FOR VERTICAL ALIGNMENT AND TIGHTEN BEARING MOUNTING BOLTS. TORQUE TUBE MUST BE VERTICAL.
17. CHECK TORQUE TUBE WITH PLUMB LINE AND SECURE STEADY SHAFT ANCHOR BOLTS.
18. ATTACH COLLECTOR ARMS AND SUPPORT RODS TO TORQUE TUBE.
19. ATTACH BLADES TO COLLECTOR ARMS AND ADJUST CLEARANCE TO 1/8".
20. ATTACH BASE AGITATOR TO TORQUE TUBE.
21. ATTACH INFLUENT TRANSFER PIPE AND

22. ATTACH SCUM SKIMMER ASSY TO TORQUE TUBE WITH U-BOLTS AND ADJUST TO PROPER CLEARANCE - TOP OF TANK TO CENTERLINE OF SKIMMER ARM.
23. INSTALL DRIVE MOTOR, MICRO SWITCH, V-BELTS AND BELT GUARD.
24. FILL SPEED REDUCER GEAR CASE WITH OIL TO RECOMMENDED LEVEL. GREASE TOP AND BOTTOM THRUST BEARINGS, HOOK UP POWER TO MOTOR AND ROTATE COLLECTOR AND SKIMMER ASSY. CHECK FOR ALIGNMENT AND BINDING.



ISSUE NO. 4 DATE 3-13-69
 FOR APPROVAL

NO.	DESCRIPTION	BY	CH	APP'D
3	CHANGED DIM.	WMP	HWP	
4	GENERAL REVISIONS	WDC	HWP	
REVISIONS				
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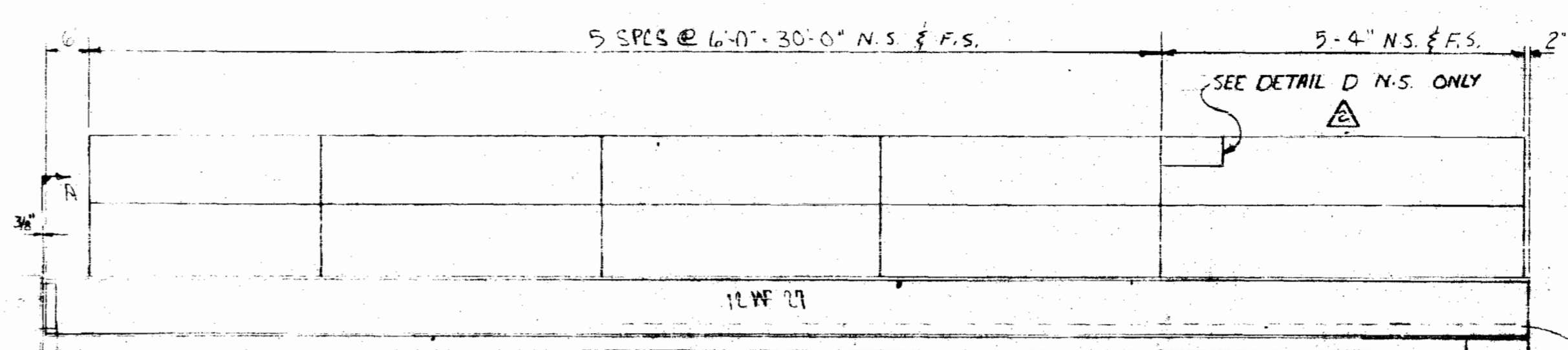
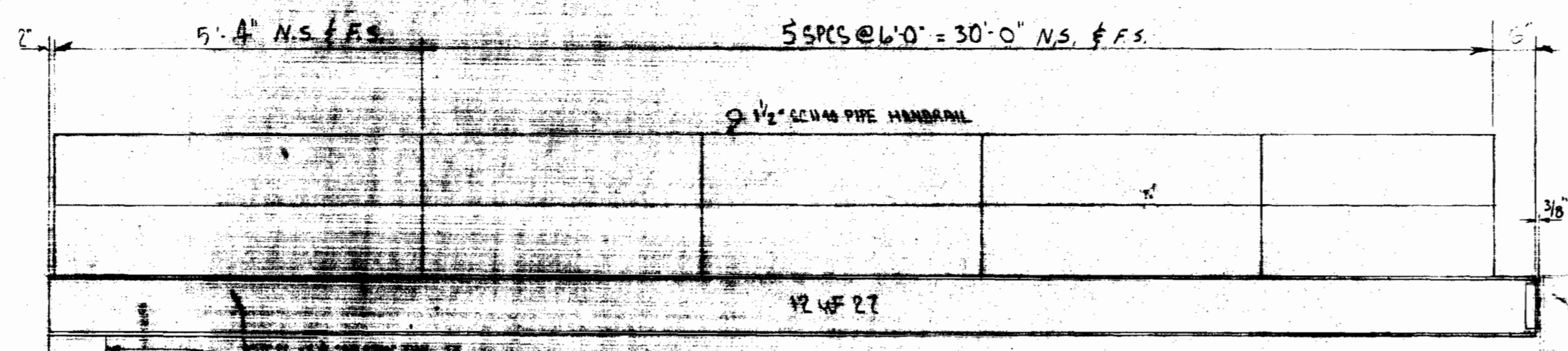
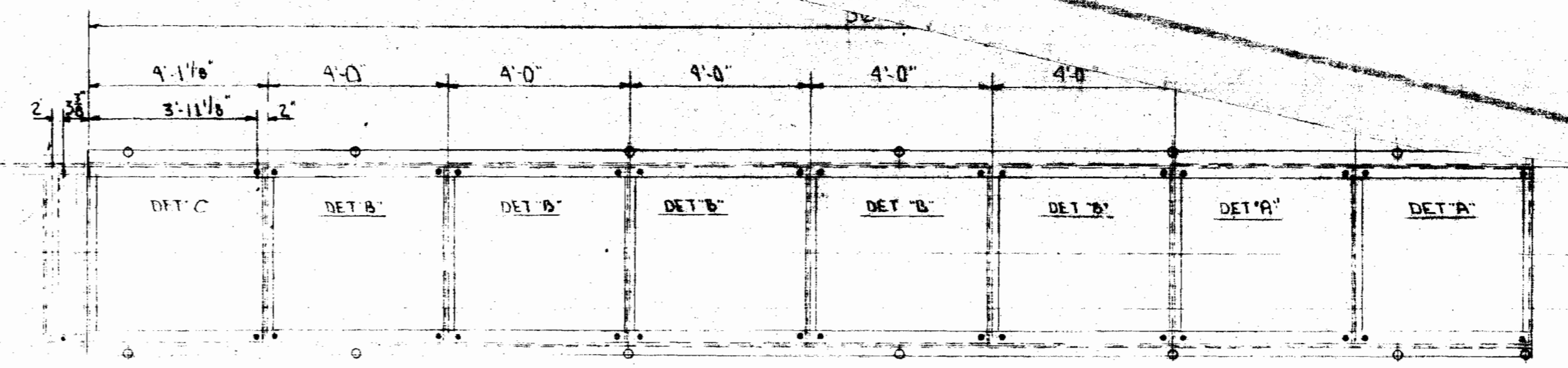
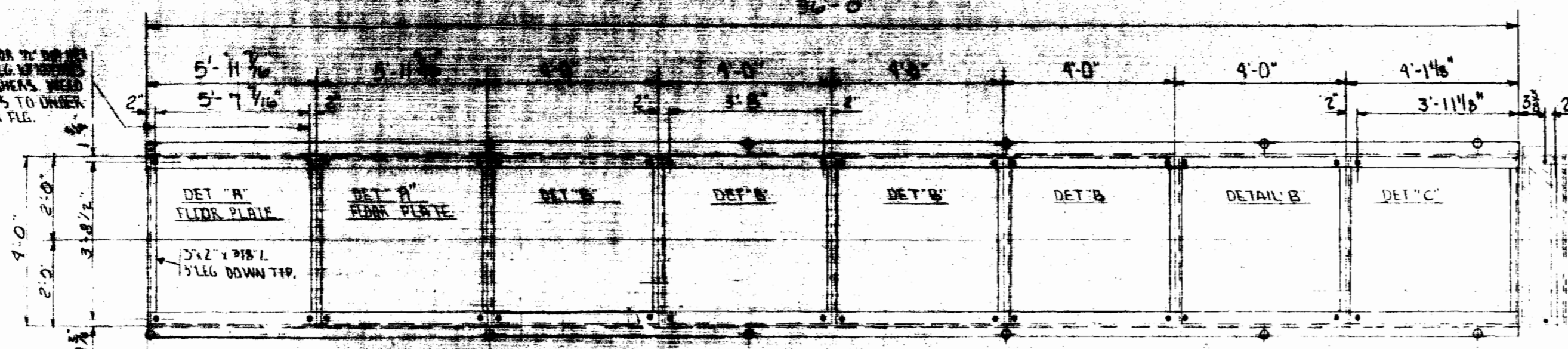
**DRAVO AEROPACK
SEWAGE TREATMENT PLANT
HOWARD COUNTY, MARYLAND
2,000,000 G.P.D.**

**SECTIONAL ELEVATION OF CLARIFIER
AND ASSEMBLY INSTRUCTIONS**

SCALE NONE	APP'D
DR. I. CH. W. M. E.	J. E. M.
DATE 1-15-69	

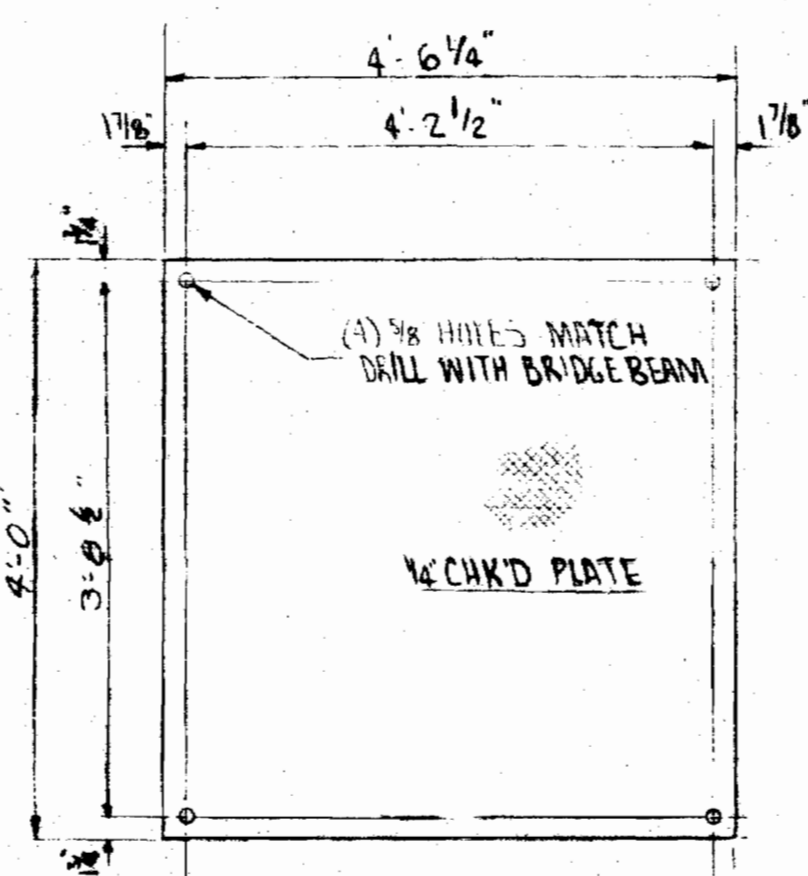
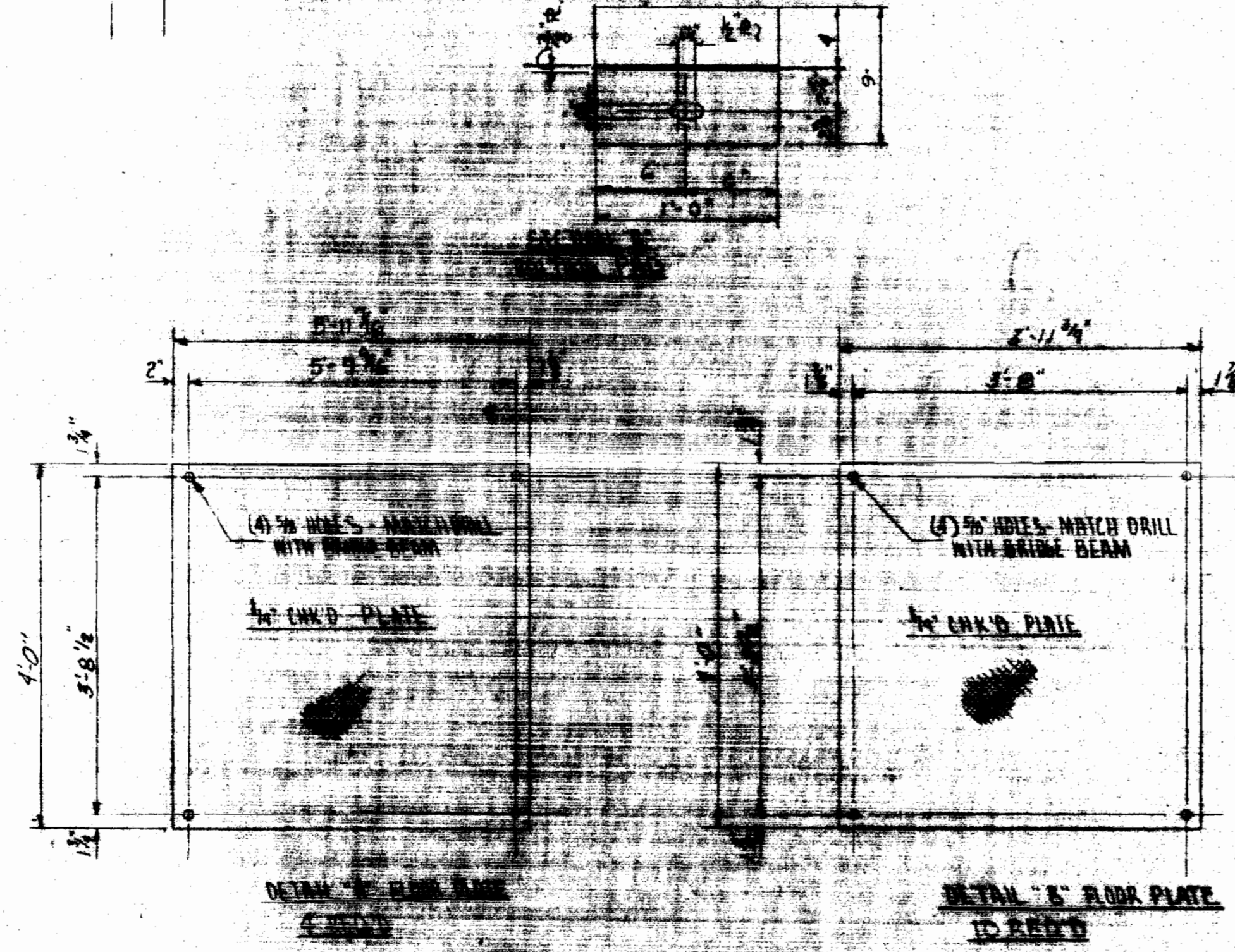
Dravo
DRAWING
FM-10

3/8" DIA HOLES FOR 3/8" DIA BOLTS 2 1/2" LG. TAPERED WASHERS W/ NUTS TO UNDER SIDE OF BEAM PLG.

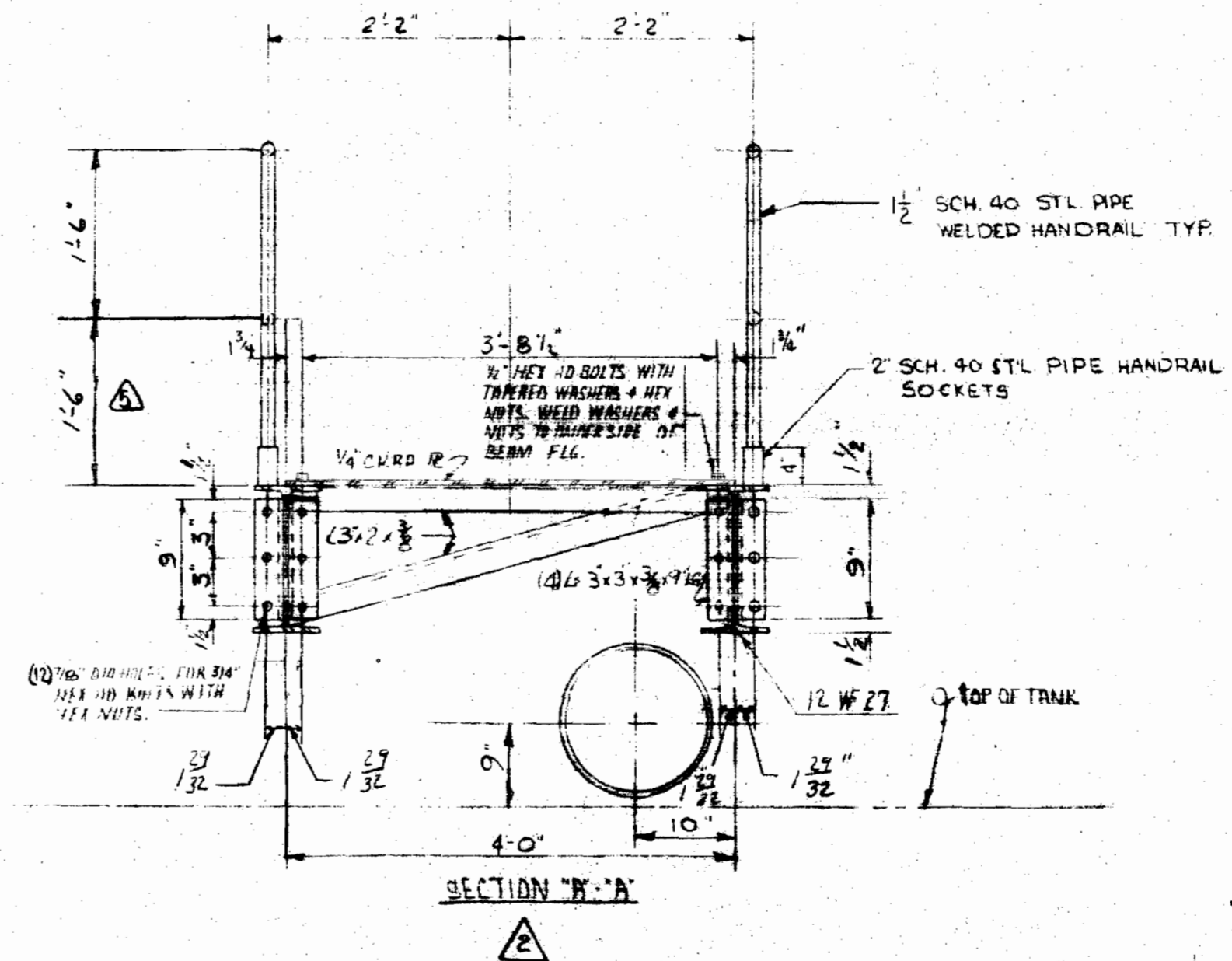


ROTT WELD HEAVE SECTIONS TOGETHER IN FIELD

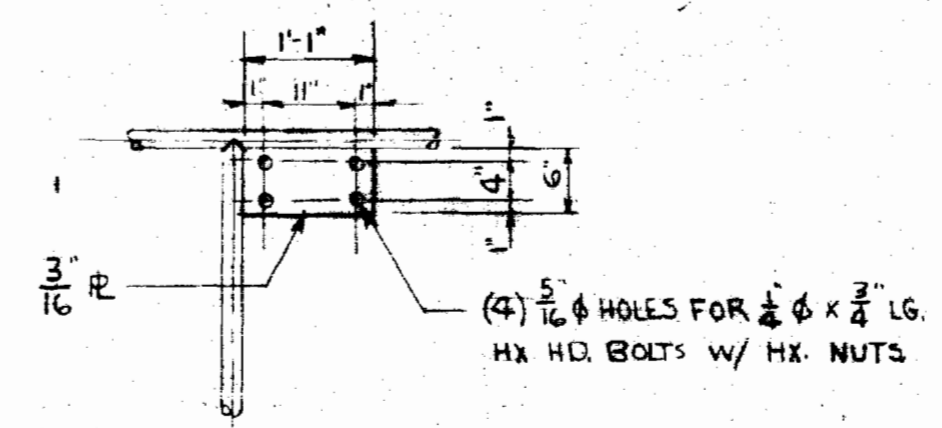
35'-5" LENGTH OF BR-HEADER



DETAIL "C" FLOOR PLATE
2 REQ'D



DETAIL "D" NAMEPLATE BRKT.



NOTE:
FOR GENERAL NOTES
SEE DWG PM-15
BOLTS, NUTS & TAPERED WASHERS TO BE FABRICATED BY FABRICATOR. BRIDGE TO BE WITH PLATES BOLTED DOWN.

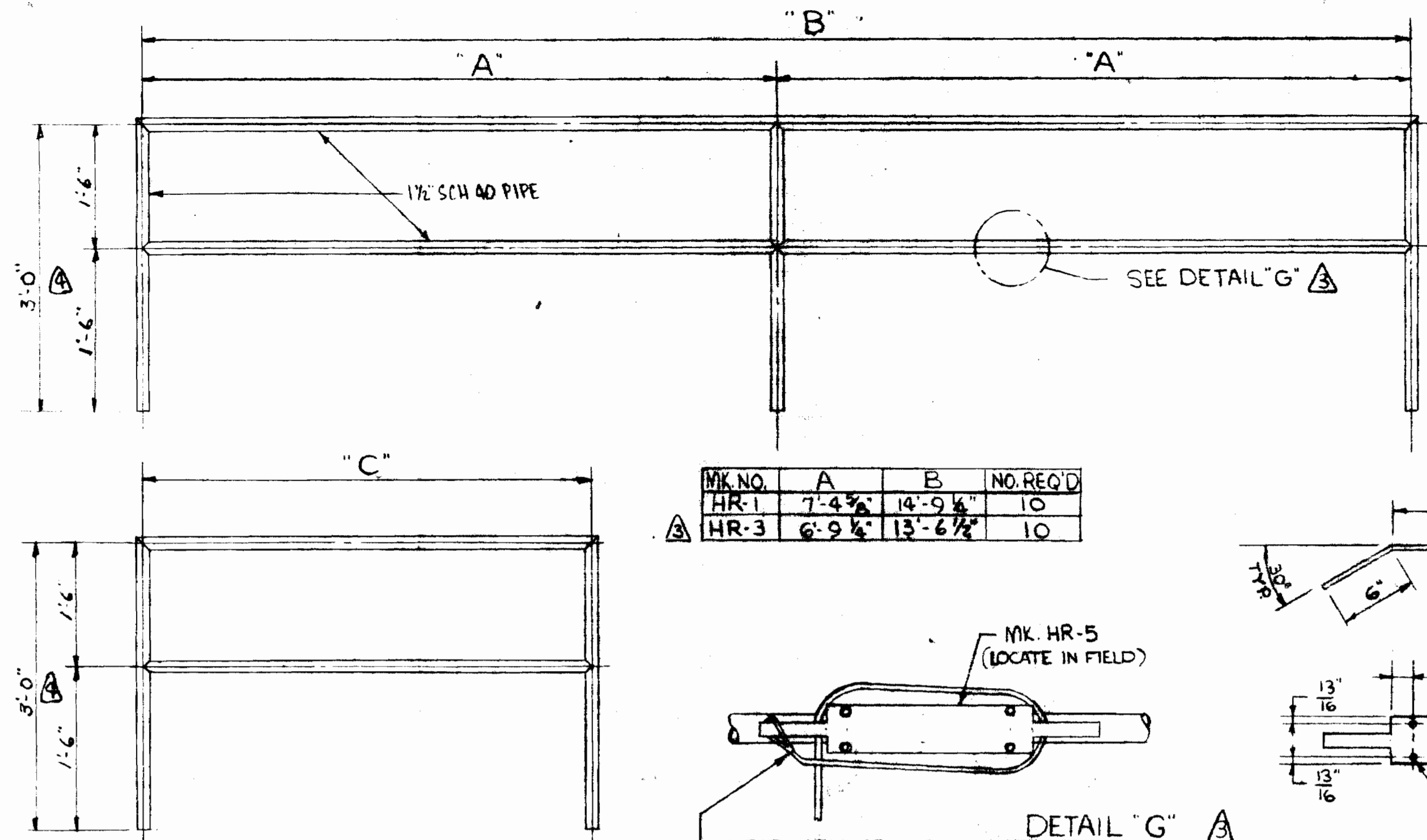
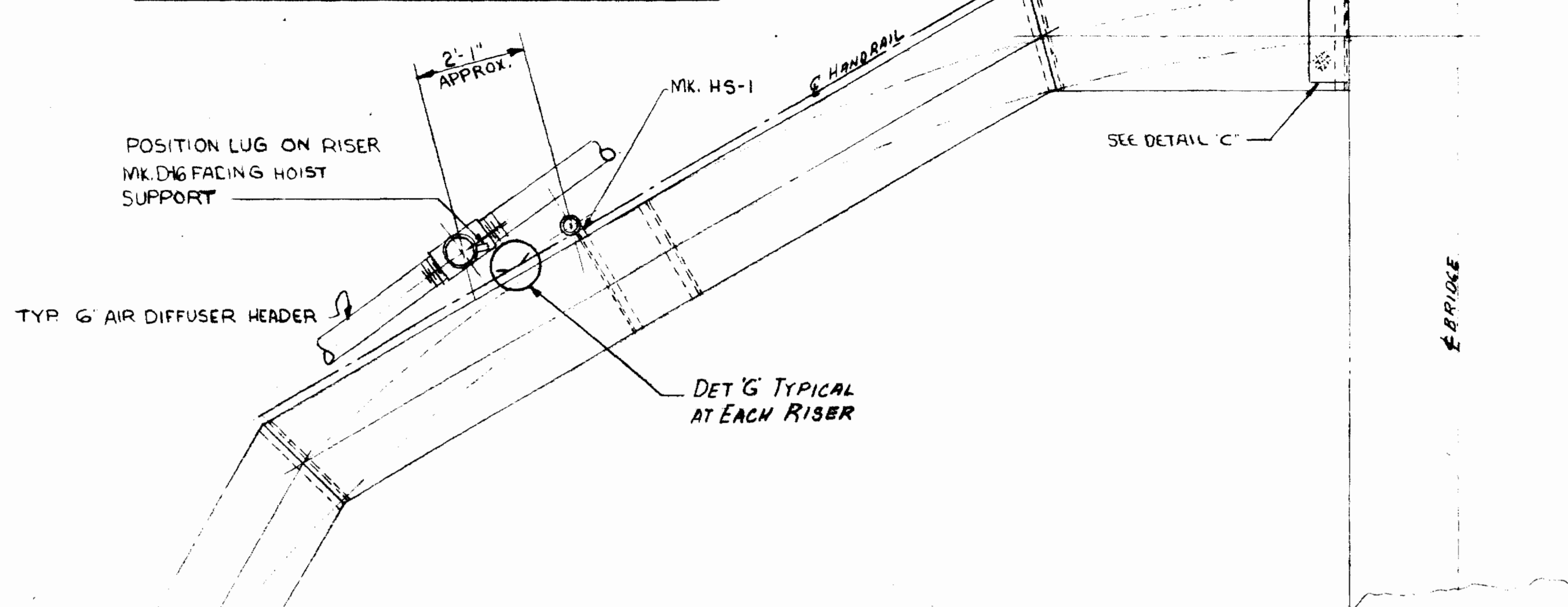
DRAVO AEROP
SEWAGE TREATMEN
HOWARD COUNTY, M
2000000000

4-7-69	CHK'D HANDRAIL BRACKET	J.P.
8-27-69	CHK'D HANDRAIL BRACKET	J.P.
8-12-69	ALIAS EST. TO AIR RENOV	J.P.
2-5-69	CHK'D BRACKET	J.P.
1-22-69	CHK'D BRACKET	J.P.

DATE PRINTED 4-7-69

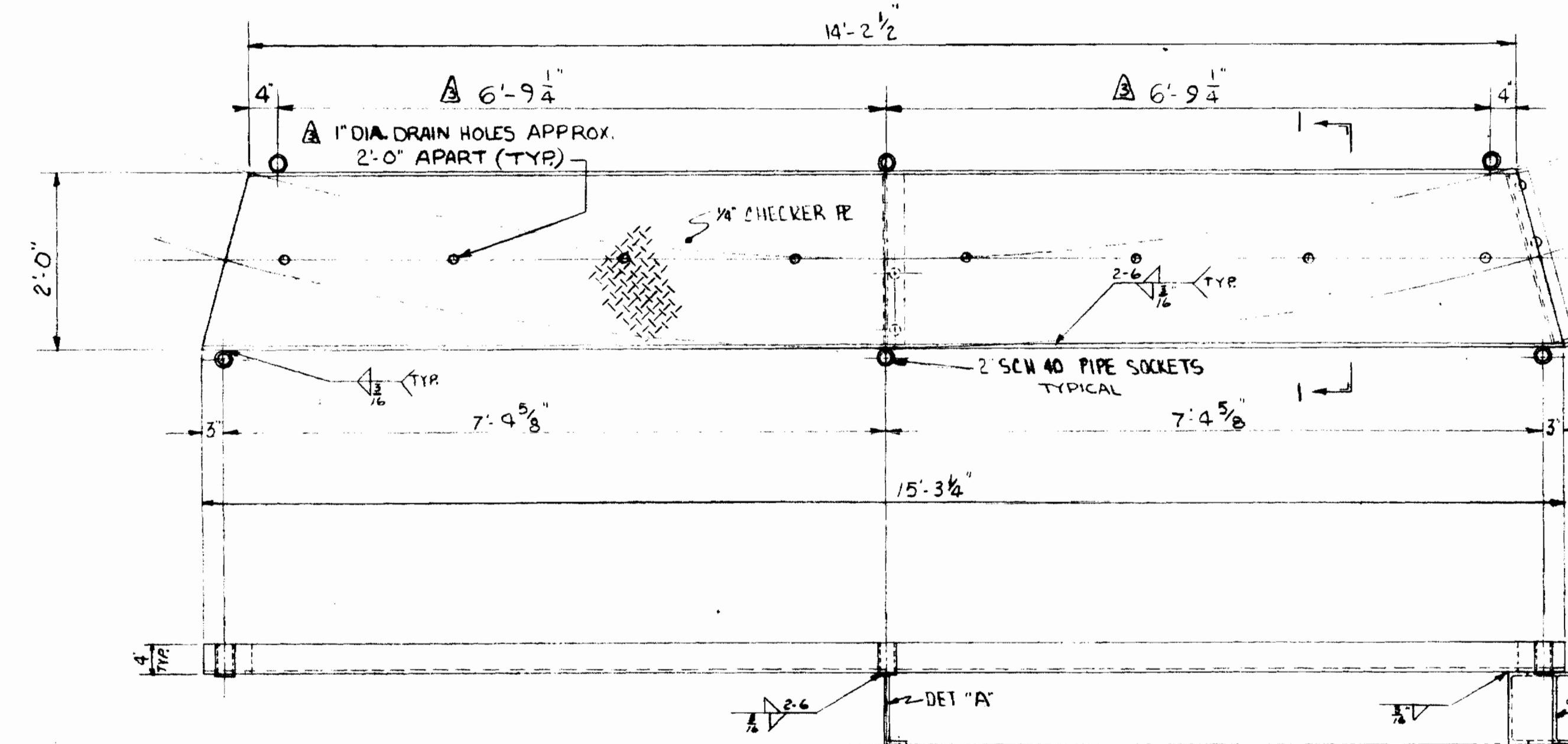
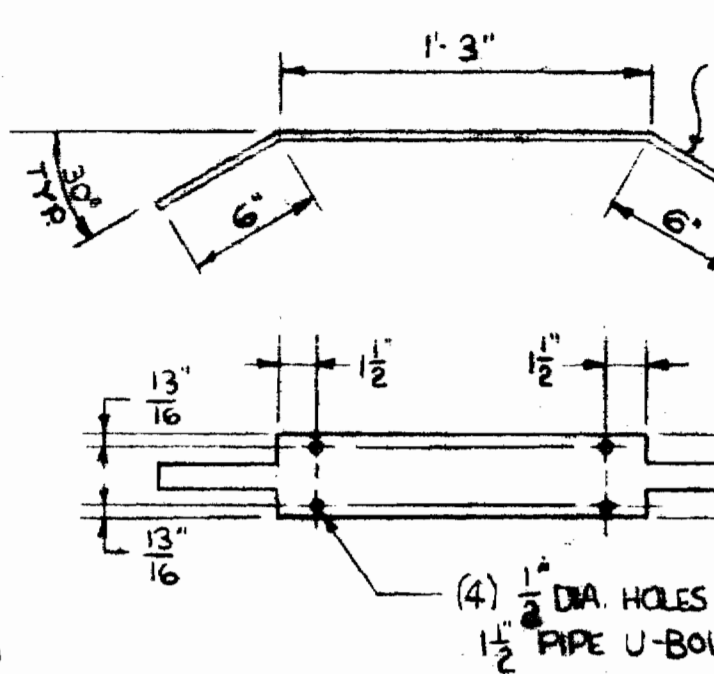
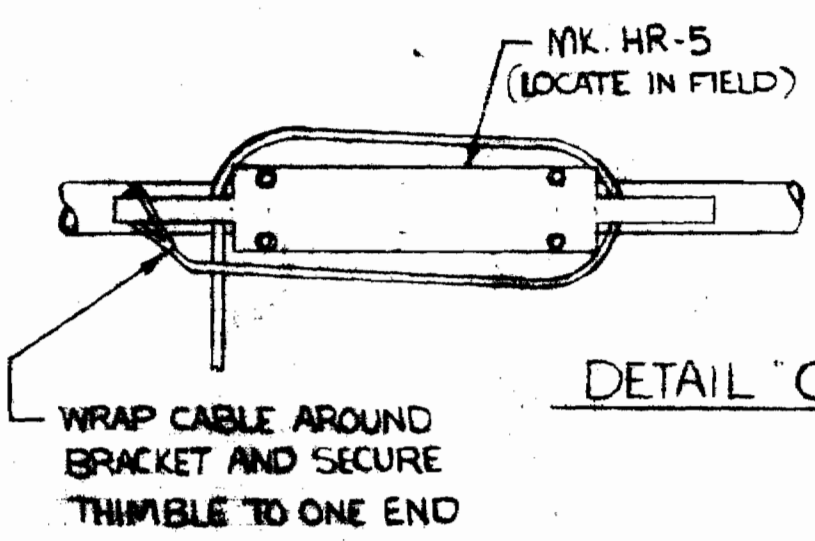
NS 237-S/M

△ SUGGESTED HOIST SUPPORT LOCATION

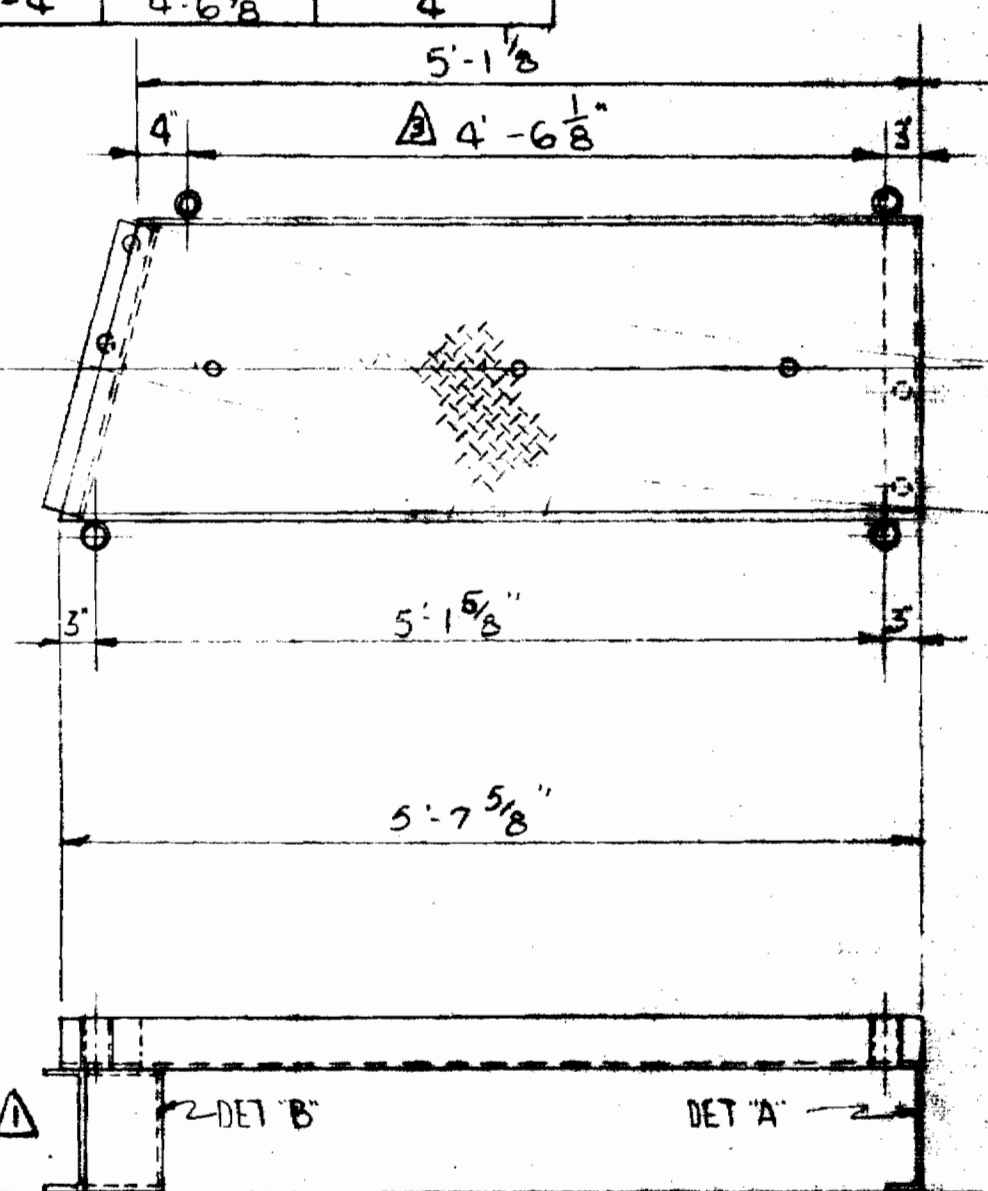


MK. NO.	A	B	NO. REQ'D
HR-1	7'-4 3/8"	14'-9 1/4"	10
HR-3	6'-9 1/4"	13'-6 1/2"	10

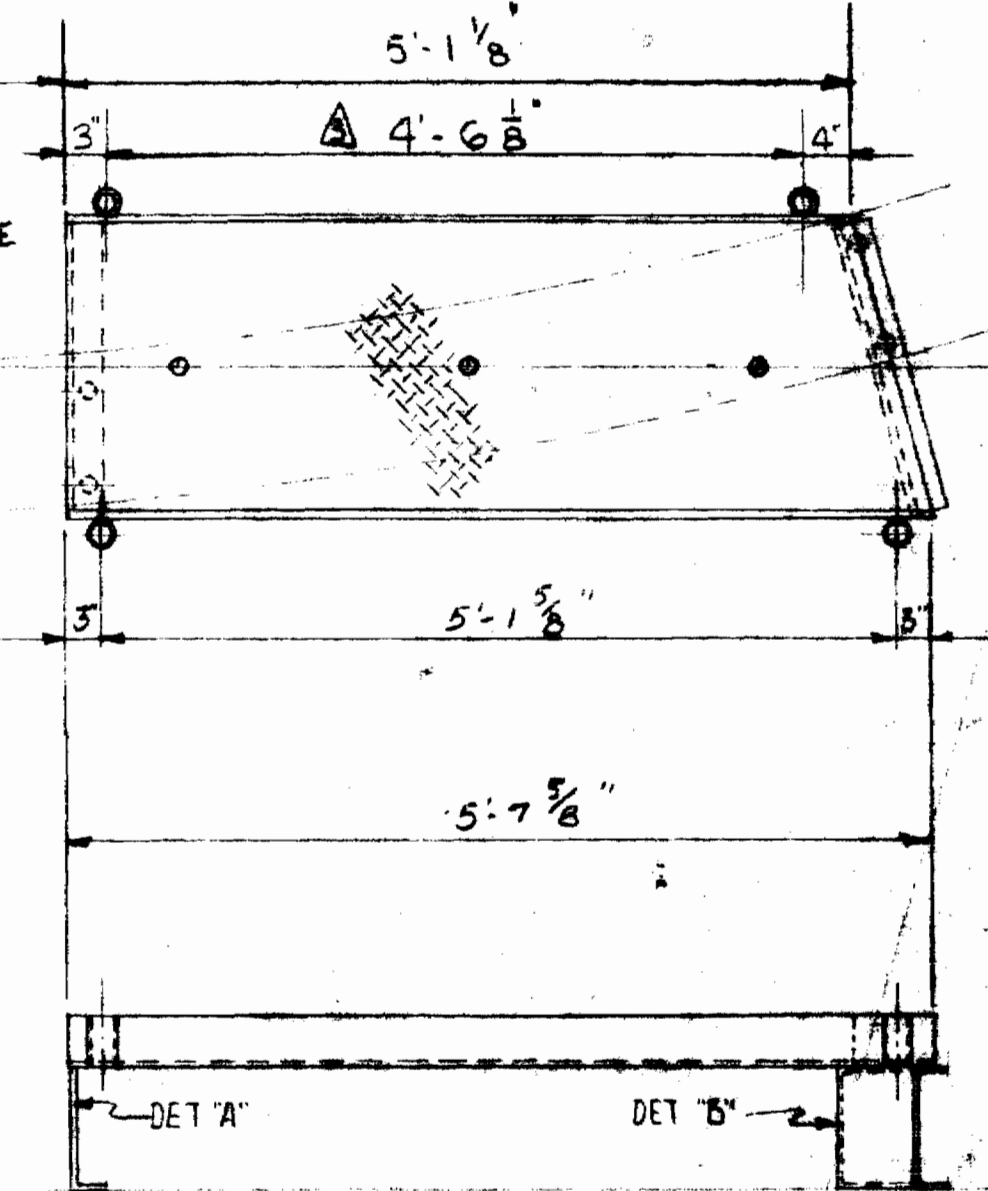
MK. NO.	"C"	NO. REQ'D
HR-2	5'-1 5/8"	4
HR-4	4'-6 1/8"	4



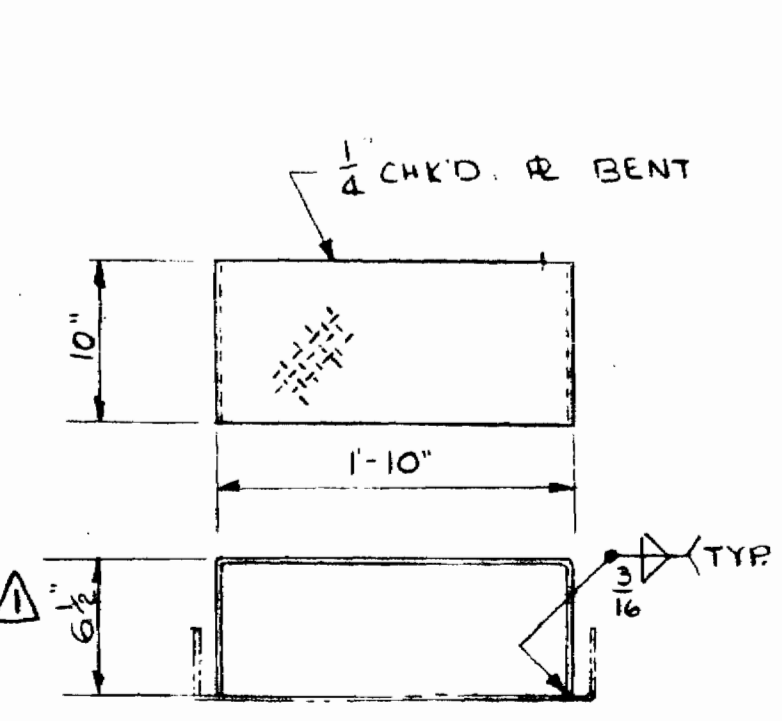
WALKWAY MK. WW-1
TEN (10) REQ'D



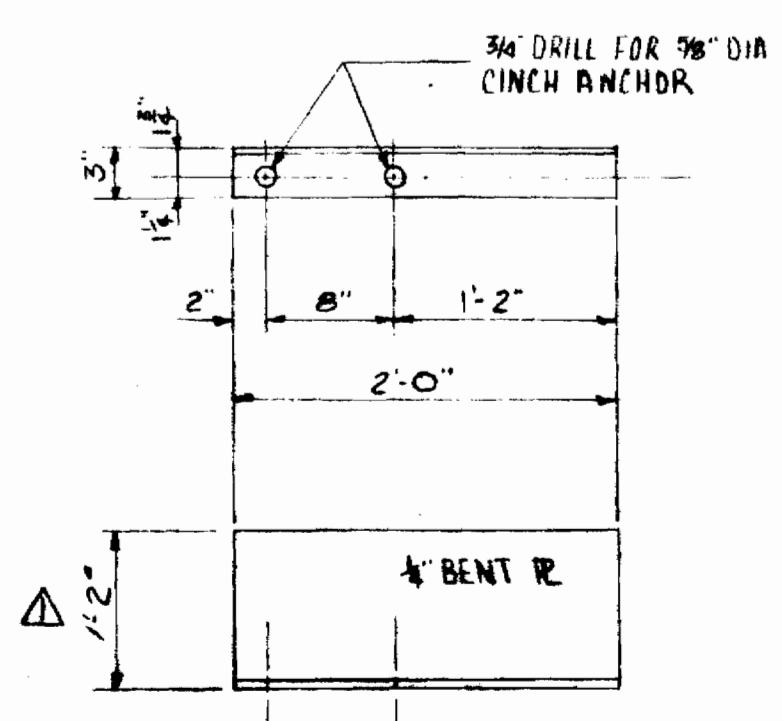
WALKWAY MK. WW-2
TWO (2) REQ'D



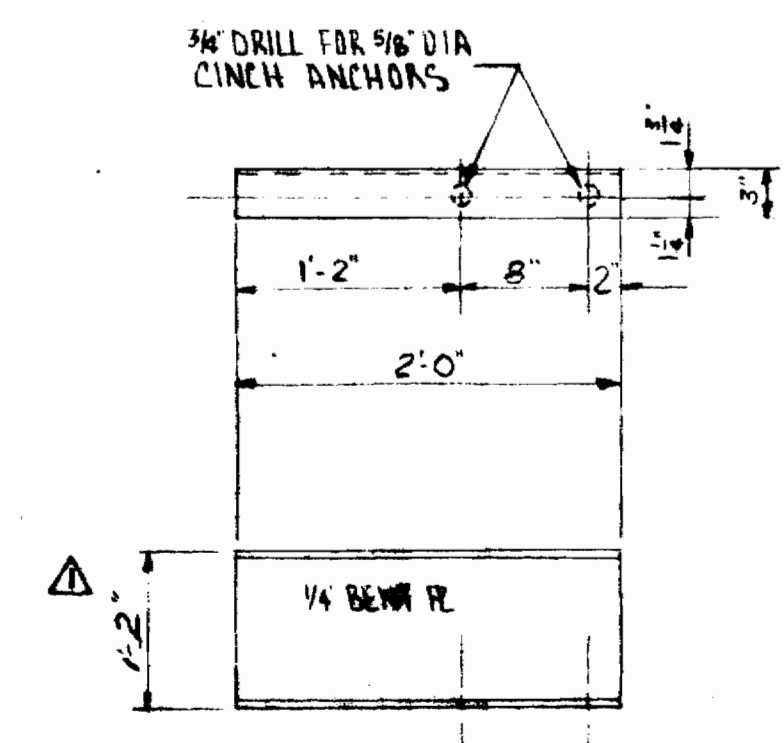
WALKWAY MK. WW-3
TWO (2) REQ'D



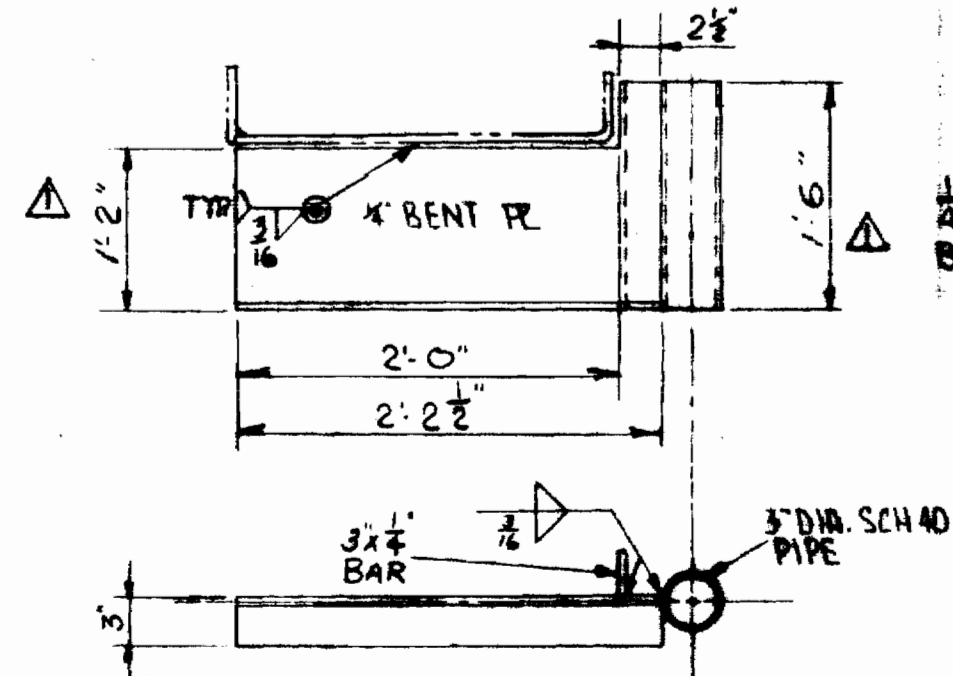
DETAIL "C" STEP 4 REQ'D
POSITION IN FIELD



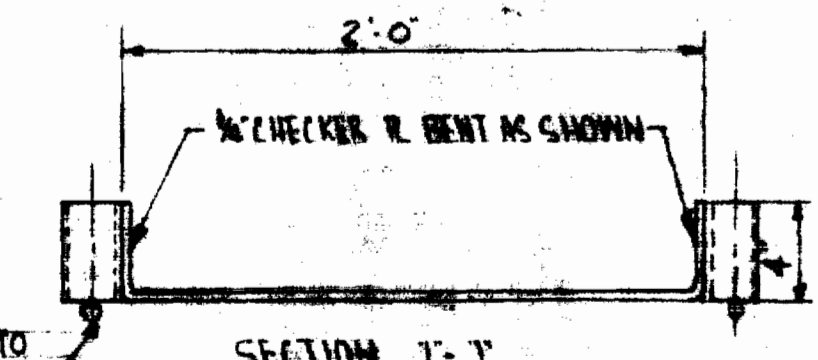
DETAIL "A" WALKWAY SUPPORT
FOURTEEN (14) REQ'D



DETAIL "B" WALKWAY SUPPORT
TWELVE (12) REQ'D



MK. HS-1 - HOIST SUPPORT
NINE (9) REQ'D
(To Be Placed in Field at Each
Riser Location)



SECTION 1-1
NOTE: AS AN ALTERNATE TO BENDING AS SHOWN
4" x 4" BARS MAY BE SUB. FOR THE SIDE MEMBERS
WELDED 2-1/2" TOP & BOTTOM.

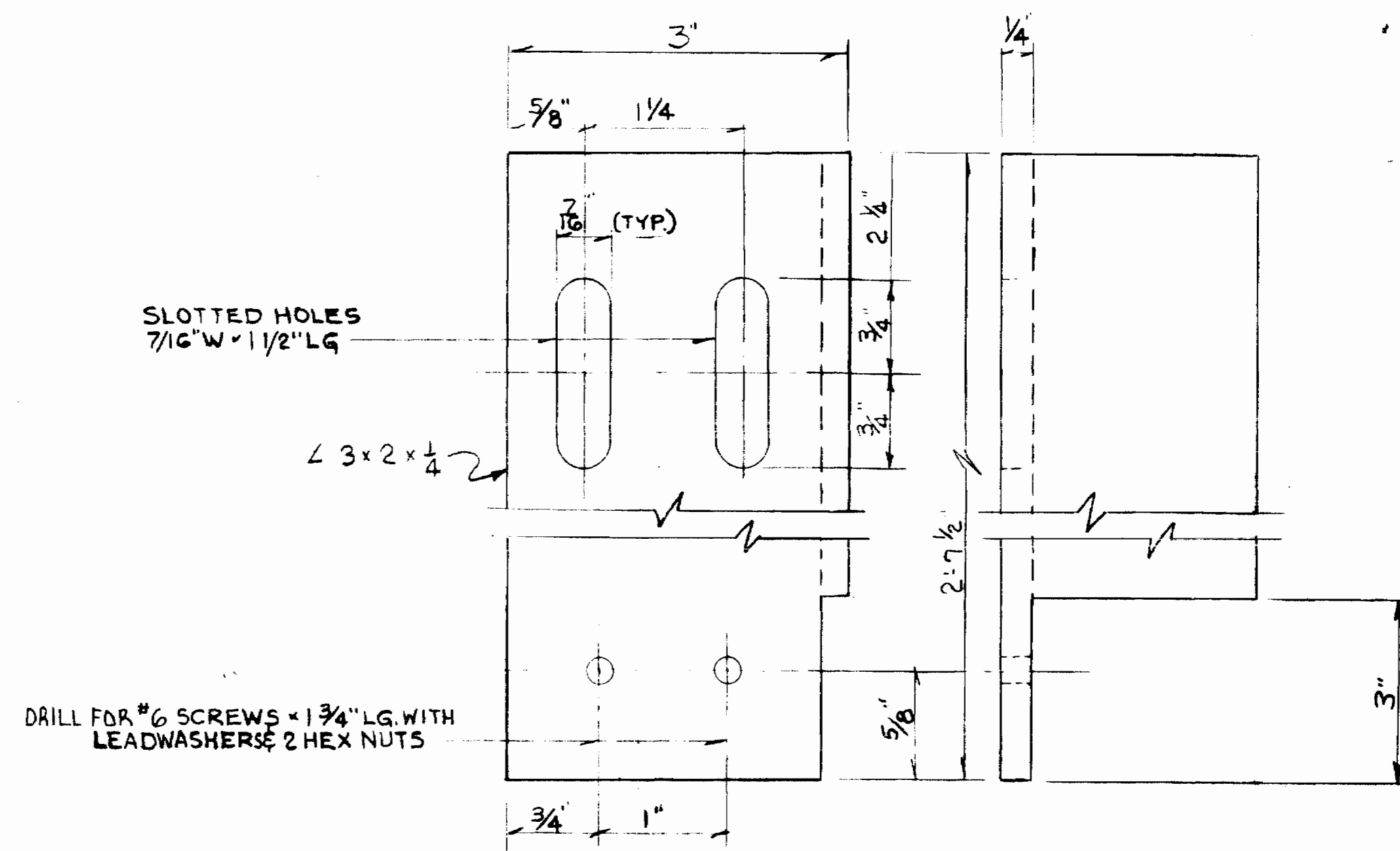
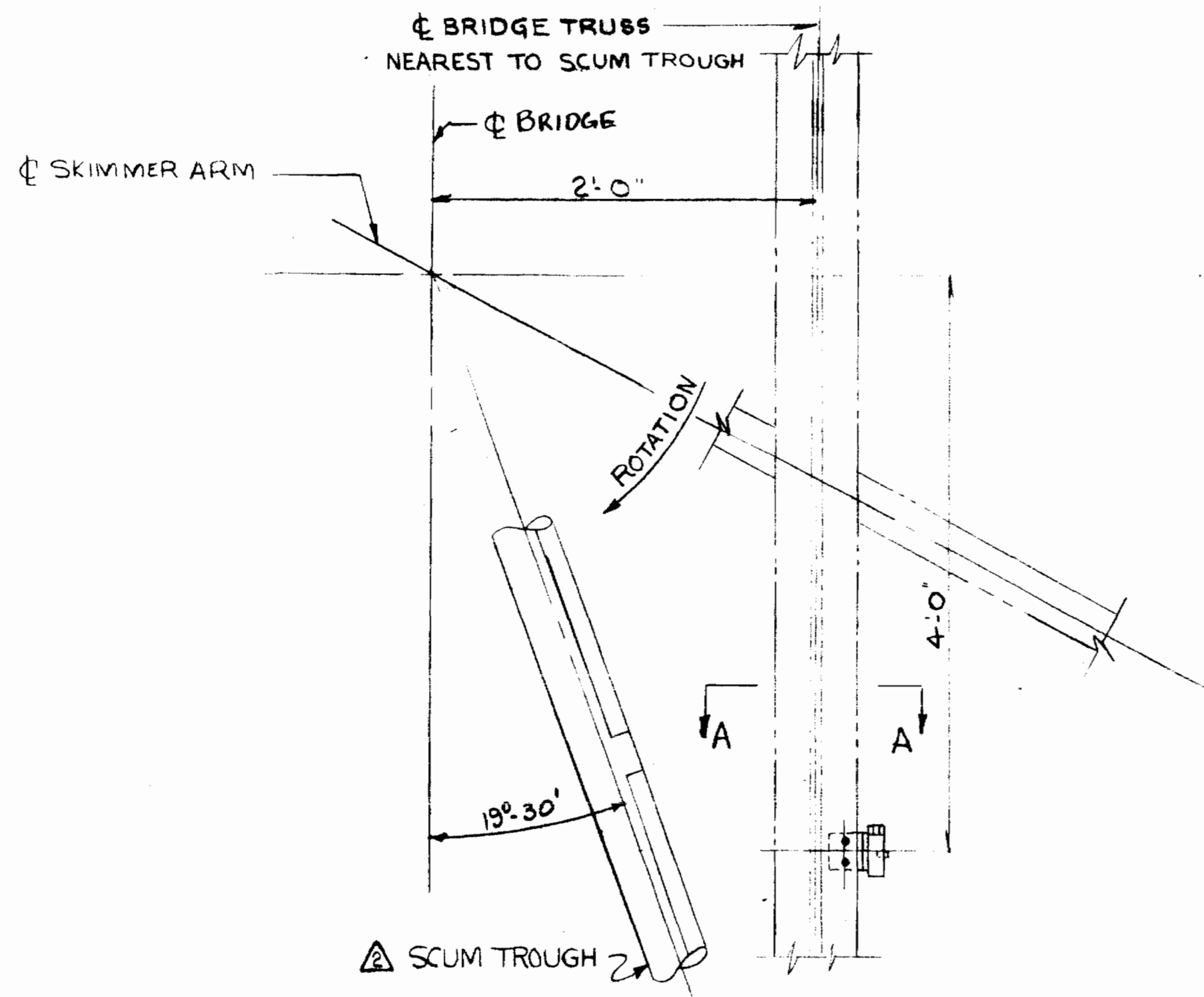
NOTES:
FOR PRINTING SPECS. REFER TO DWG. F
REFER TO GENERAL ARRANGEMENT DWG.
FOR PLACEMENT OF WALKWAY SECTION

NO.	DATE	DESCRIPTION	BY	CHK	APP'D
1	4-7-69	CHG'D HANDRAIL HEIGHT			
2	3-26-69	ADDED DRAIN HOLES & HANDRAIL WALKWAYS, REVISED G			
3	3-13-69	ADDED DETAIL 'G'			
4	2-5-69	Gen. Conditions			

DRAYO AEROPACK
SEWAGE TREATMENT PLANT
HOWARD COUNTY, MARYLAND
200000 G.P.D.

CLARIFIER WALKWAY DETAILS

SCALE: NONE
DR. FINLEY, CH. M.P.
DATE: 1-15-69
WTA-1023
DRAWING NO.



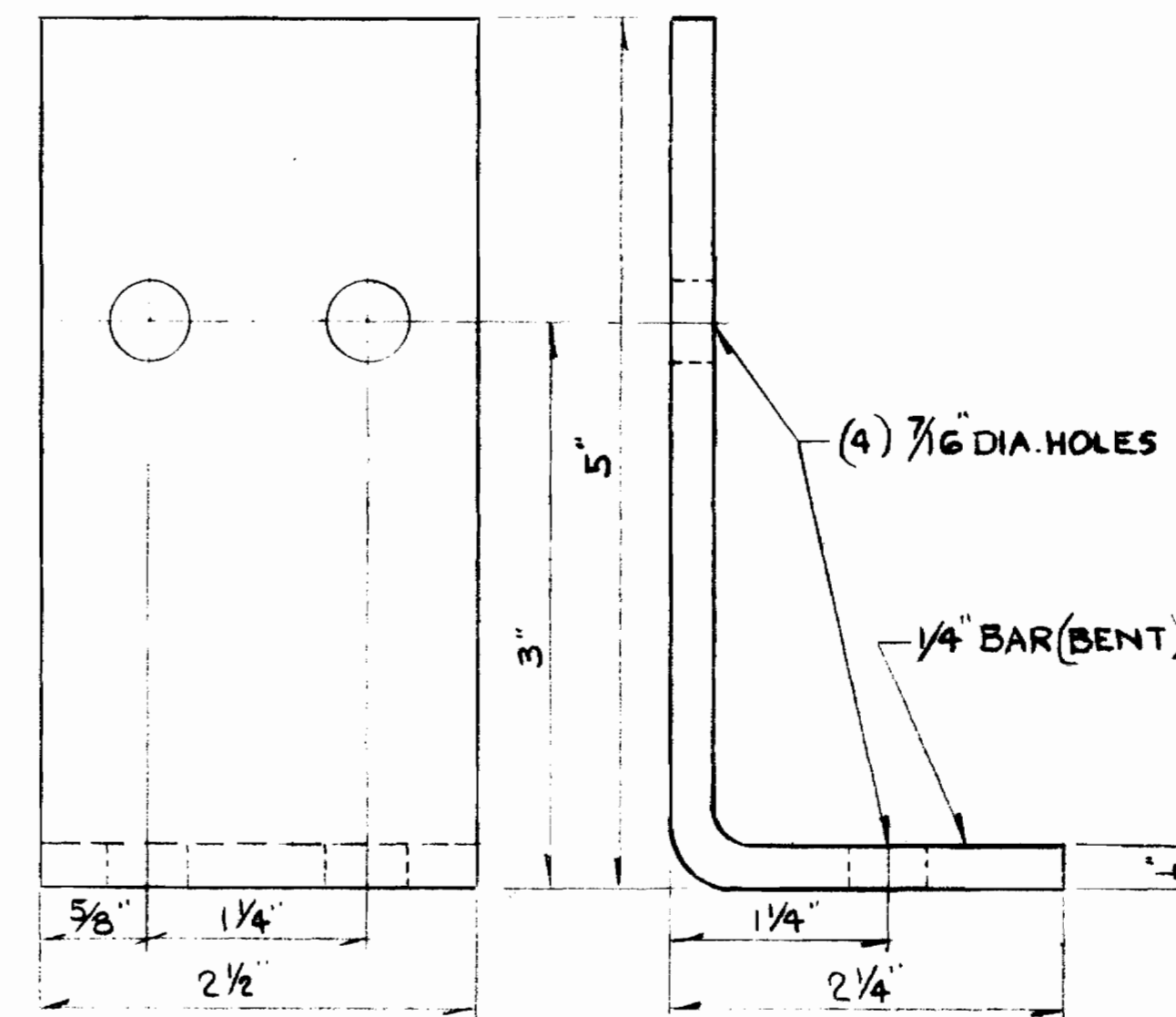
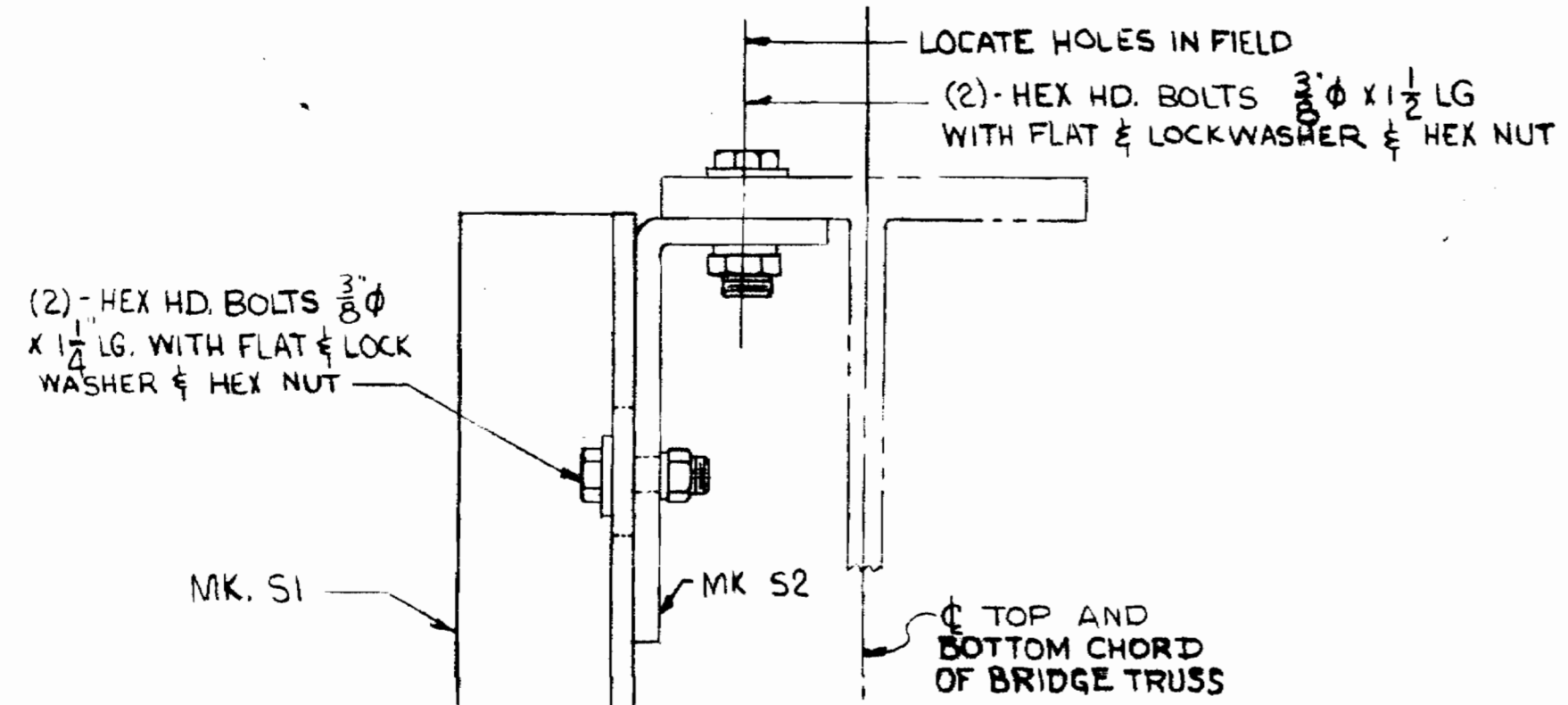
SWITCH MOUNTING PLATE-MK-S1
SCALE: FULL ONE REQD.

INSTALLATION INSTRUCTIONS

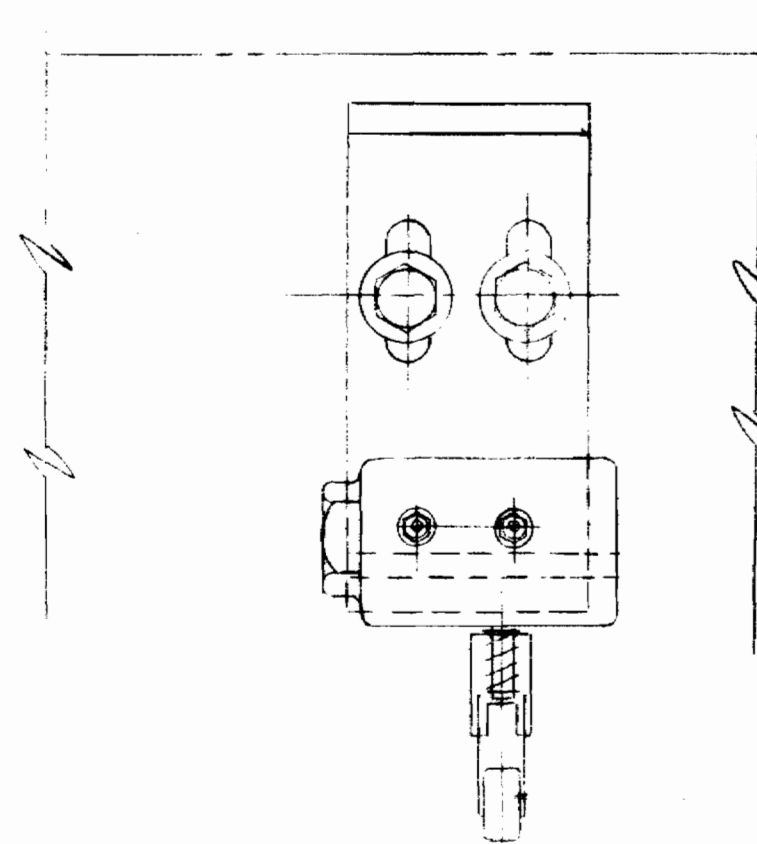
1. LOCATE SWITCH BRACKET AND HOLD WITH "CEE" CLAMPS.
2. AFTER LOCATION IS FINALIZED EITHER DRILL & BOLT TO TOP CHORD OF BRIDGE AS SHOWN OR TACK WELD BRACKET TO SAME.

NOTES

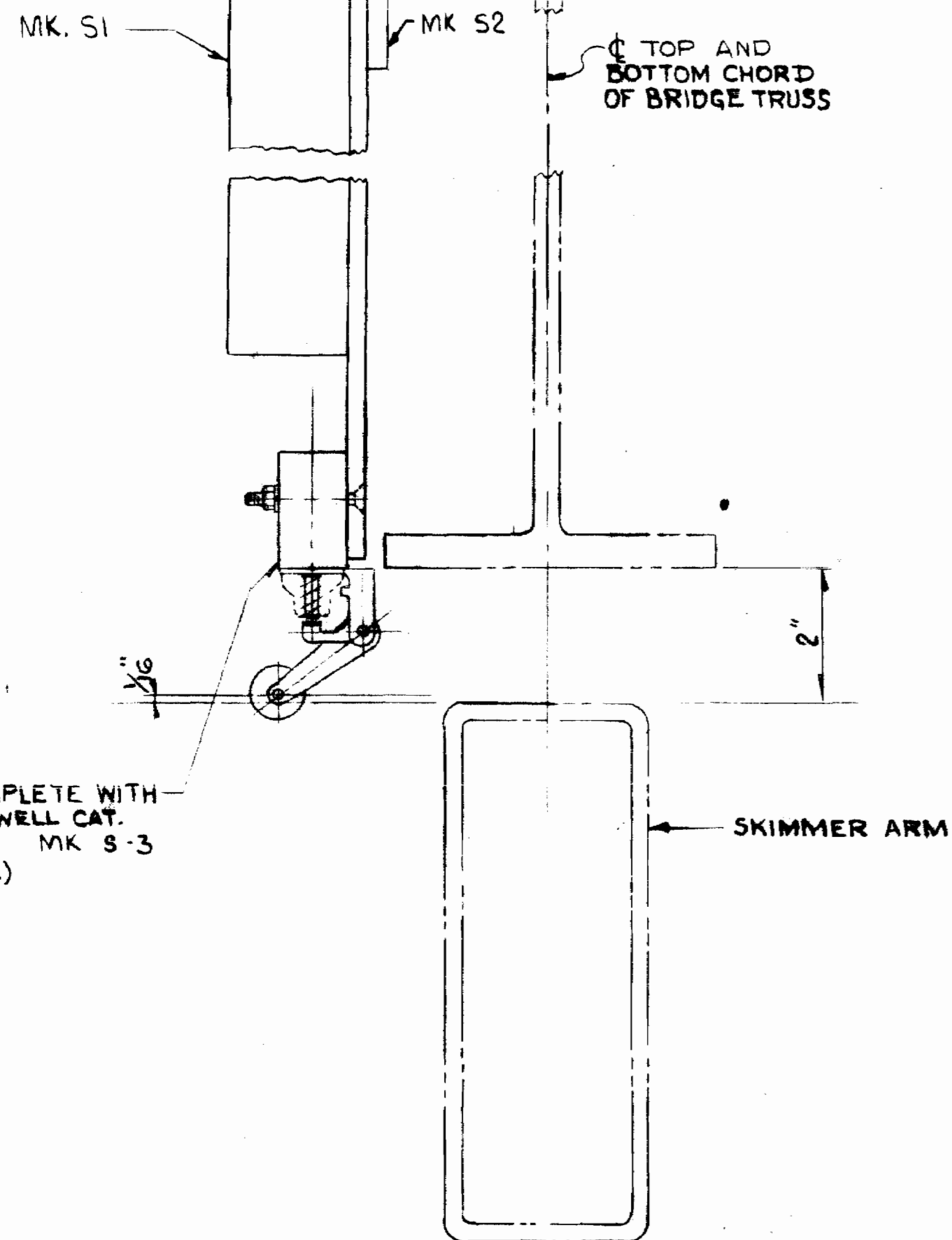
FOR NOTES ETC SEE DWG. 101-FM-1
FABRICATOR TO SUPPLY ALL BOLTS, NUTS, WASHERS SHOWN ON DWG.



BRACKET-MK-S2
SCALE: FULL ONE REQD.



MICRO SWITCH-COMplete WITH ROLLER ARM-HONEYWELL CAT. NO. BZEG-2RN2 MK S-3 (SEALED ACTUATOR)

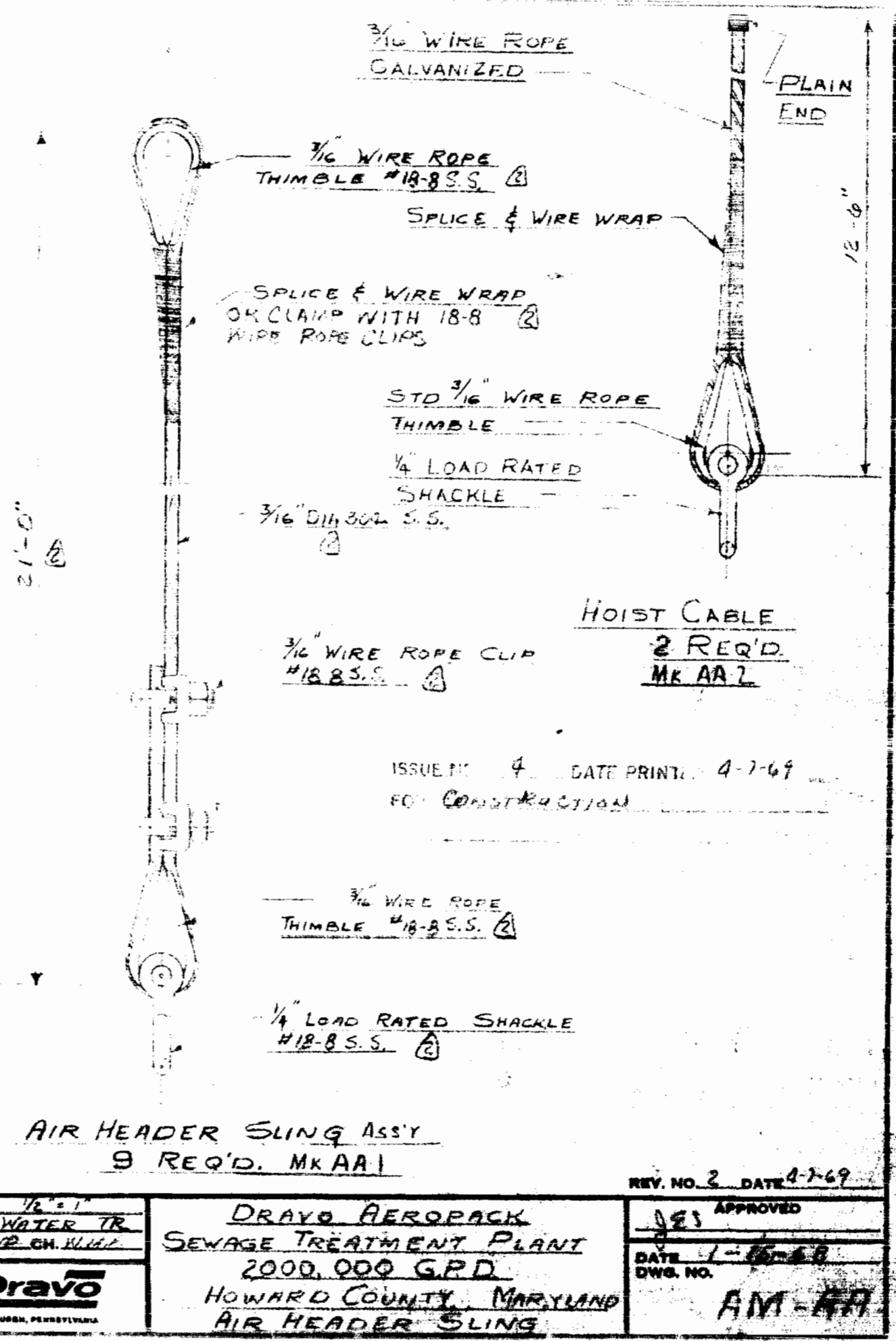


VIEW A-A

ISSUE NO. 5 DATE 4-2-69 FOR CONSTRUCTION

DRAGO AEROPACK SEWAGE TREATMENT PLANT HOWARD COUNTY, M.D. 2,000,000 G.P.D.			
SCUM SKIMMER SWITCH ARG. L.			
4-7-69	CHK'D NOTE	WF	J.P.
3-26-69	ADDED SCUM TROUGH LOCATION	WF	WF
3-12-69	REVISED MOUNTING	WF	WF
NO.	DATE	DESCRIPTION	BY CH APPD
REVISIONS			
This drawing, including the information it contains, is the property of Dravo Corporation. It is authorized only in connection with the transaction to which it pertains and must not be used in any manner detrimental to the interests of Dravo Corporation. The drawing is not to be copied and must be returned upon request.			
DRAGO CORPORATION, PITTSBURGH, PA.		REV	
SCALE NOTED		APPD	
DR. FARRELL CH. M.P.		J.E. Ash	
SECT. WATER TR.		DATE 7-24-69	
WTA-102		DRAWING	
DRAGO		FM	

WS 237-S/S



AIR HEADER SLING ASSY
 9 REQ'D. MK AA1

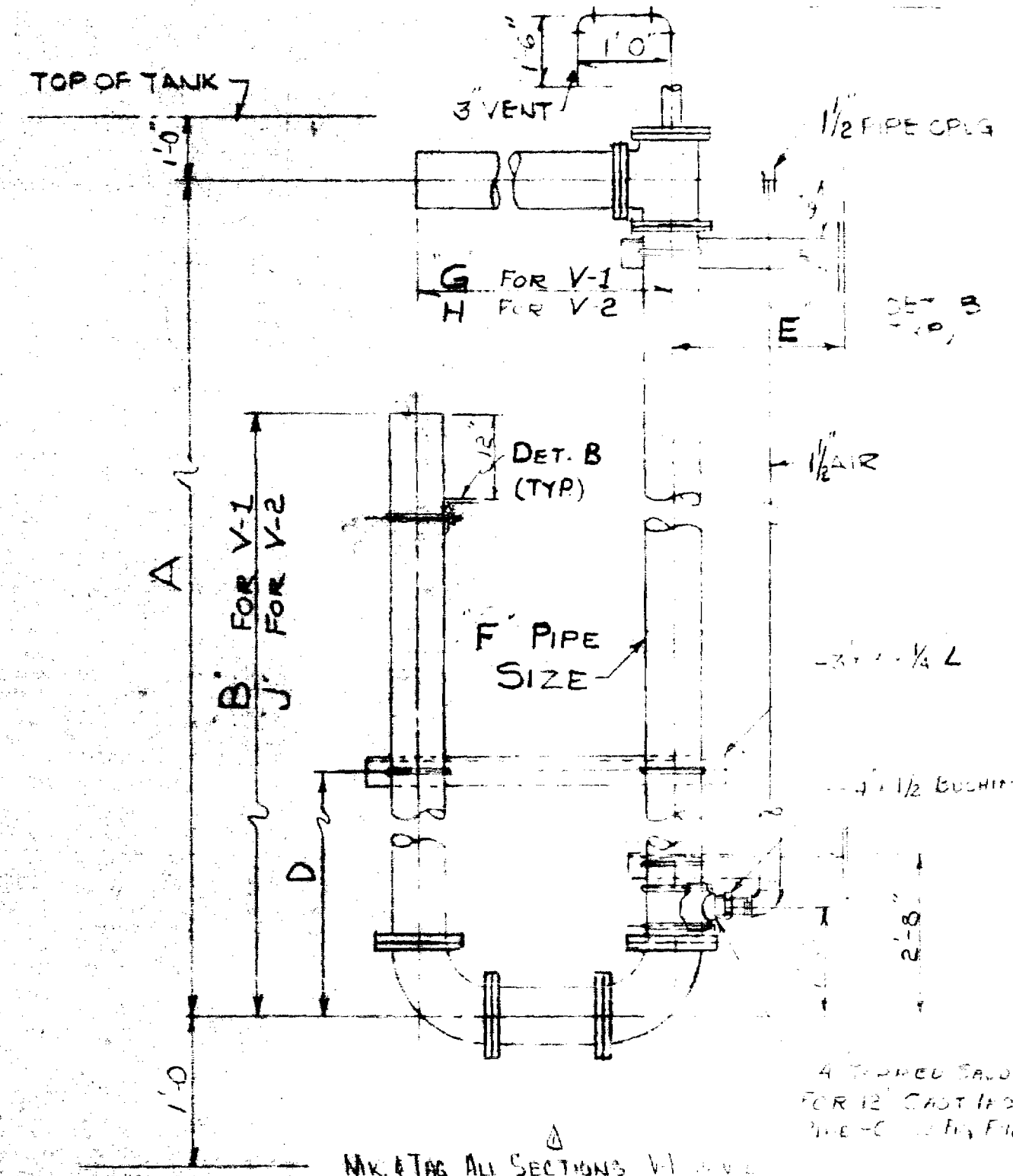
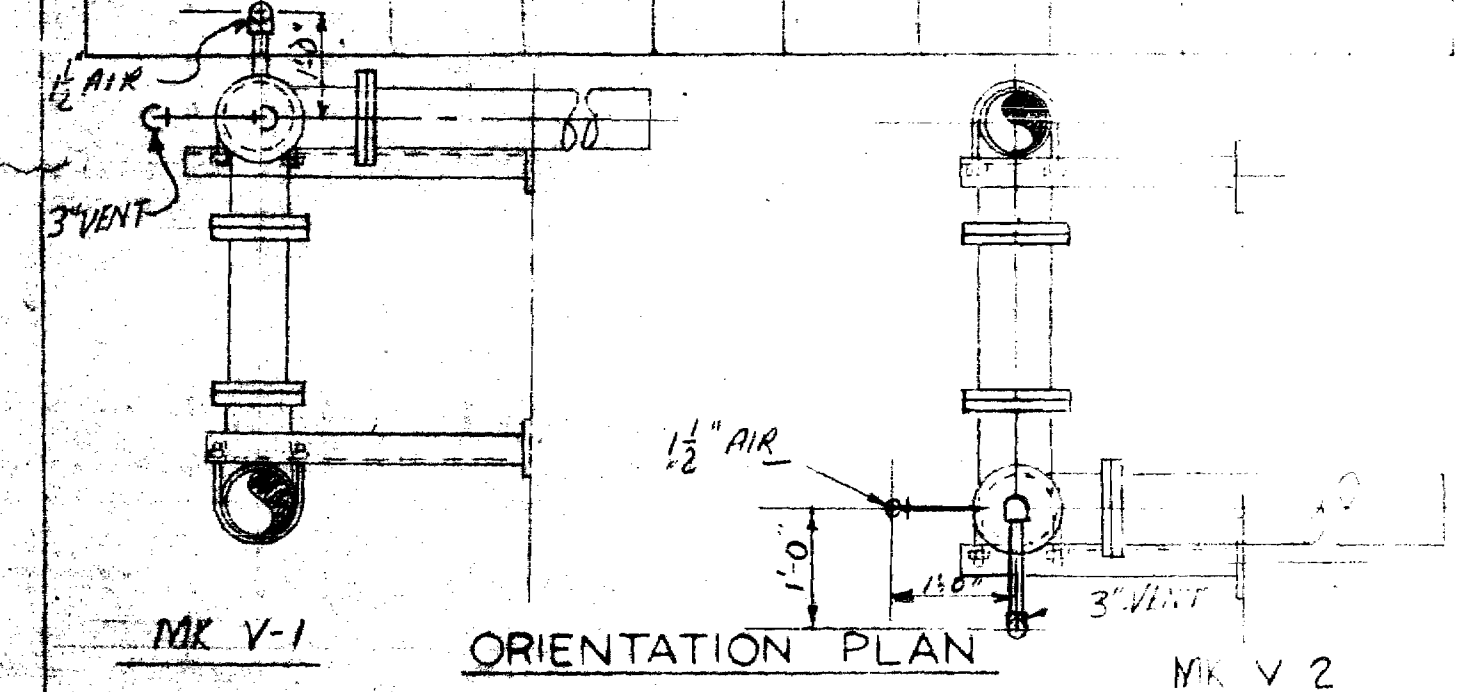
SCALE: 1/2" = 1'	DRAYO RESOPACK	REV. NO. 2 DATE 4-7-69
SECT. WATER TR.	SEWAGE TREATMENT PLANT	APPROVED
DR. MADE ON 11/11/68	2000,000 G.P.D.	DATE 1-10-69
Dravo	HOWARD COUNTY, MARYLAND	DWG. NO. AM-477
PITTSBURGH, PENNSYLVANIA	AIR HEADER SLING	

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND											
DIRECTOR OF PUBLIC WORKS	DATE	CHIEF BUREAU OF ENGINEERING	DATE	DES:							
				DRN:							
				CHK:							
				DATE:	BY	NO.	REVISION	DATE	600 SCALE MAP NO.	BLOCK NO.	

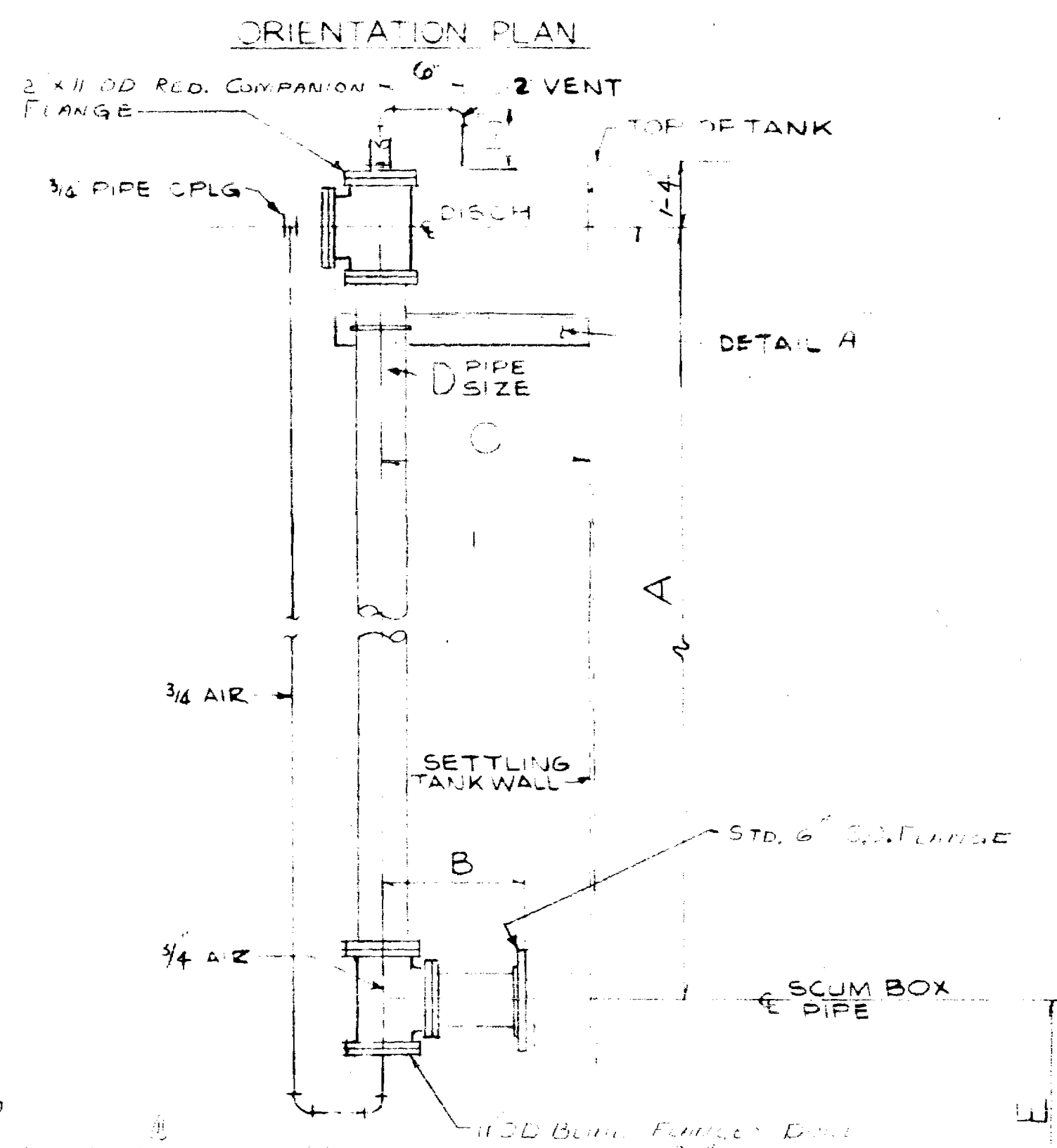
237-5

AVERAGE FLOW GPD	A	B	C	D	E	F	G	H	J
750,000									
1,000,000									
2,000,000	13'-6"	10'-6"	3'-0"	6'-0"	2'-0"	12"	14'-0"	3'-6"	8'-6"

AVERAGE FLOW GPD	A	B	C	D	E
30,000					
40,000					
50,000					
70,000					
100,000					
150,000					
200,000					
250,000					
300,000					
350,000					
400,000					
500,000					
600,000					
750,000					
1,000,000					
2,000,000	9'-0"	1'-0"	1'-6"	6"	7'-0"

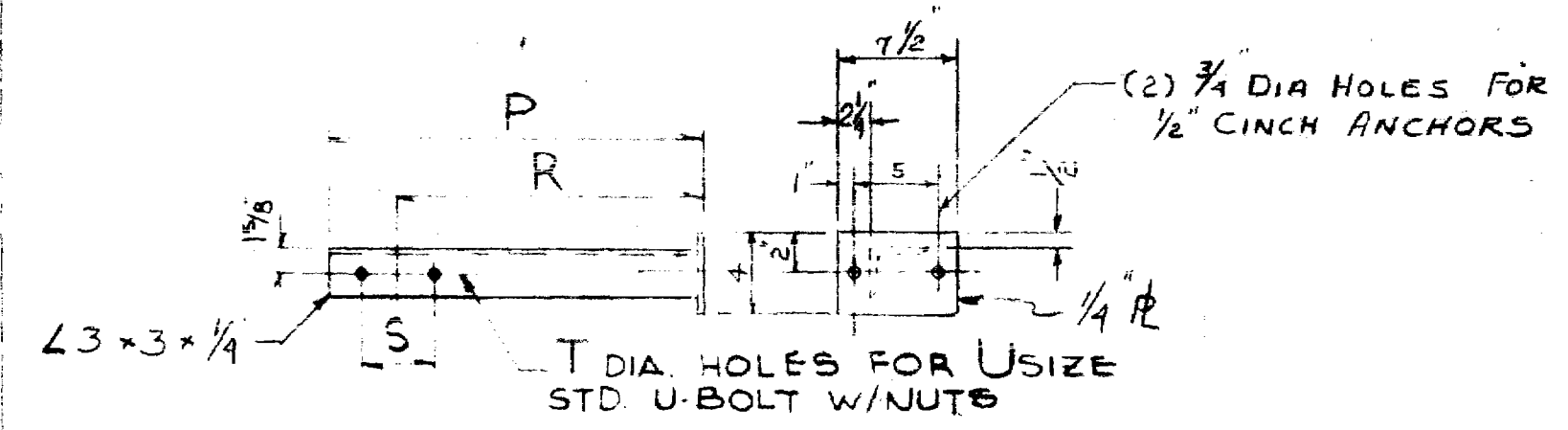


MK V-1 (ONE REQ'D) & MK V-2 (ONE REQ'D)
SUPERNATANT AIRLIFT 12 SIZE



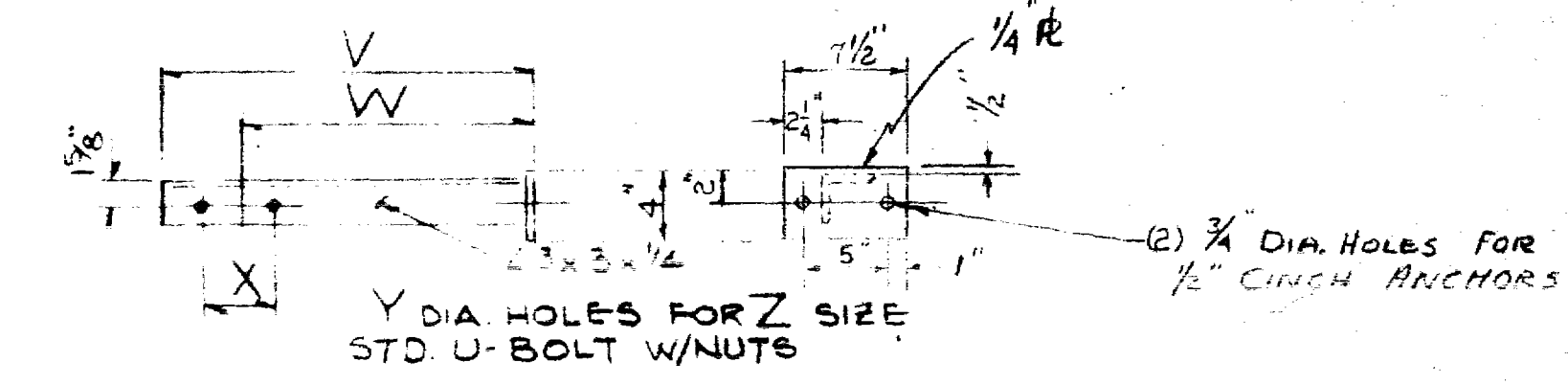
MK V-3
SCUM AIRLIFT

- GENERAL NOTES**
- 1 ALL PIPE 4" AND SMALLER TO BE SCH 40 STEEL GALVANIZED
 - 2 ALL FITTINGS 4" AND SMALLER TO BE M.I. 507 GALVANIZED BANDED
 - 3 ALL AIRLIFTS TO BE WILD ANCHORED PER THIS DRAWING
 - 4 ALL AIRLIFT SUPPORTS TO BE INSTALLED BY DRAVO



AIRLIFT SIZE	P	R	S	T	U
2					
2 1/2					
3					
4					
6	2'-0"	1'-6"	7/8"	3/4"	6"

DETAIL A - SUPPORT ANGLE
1 REQUIRED



AIRLIFT SIZE	V	W	X	Y	Z
2 1/2					
3					
12	2'-8"	2'-0"	1'-1 3/4"	1"	12"

DETAIL B - SUPPORT ANGLE
TOTAL 6 REQUIRED

NOTES FOR GENERAL NOTES SEE DWG FM-B

DRAVO AEROPACK
SEWAGE TREATMENT PLANT
HOWARD COUNTY MARYLAND
2,000,000 G.P.D.
SUPERNATANT AND SCUM AIRLIFT

NO.	DATE	DESCRIPTION	BY	CHK	APPD
Δ	2-24-69	ADDED MK V-1 TOP VIEW	W/C	MVP	
Δ	1-21-69	ADDED NOTES	M.E.		

REVISIONS

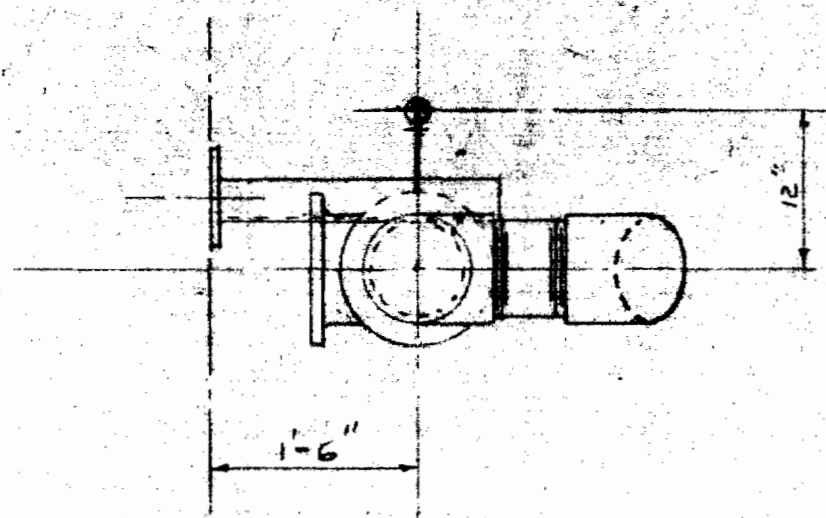
This drawing, including the information it contains, is the property of Dravo Corporation. It is not to be used in connection with the transaction to which it applies and must not be used in any manner detrimental to the interests of Dravo Corporation. This drawing is not to be used and must be returned upon request.

DRAVO CORPORATION, PITTSBURGH, PA. NY

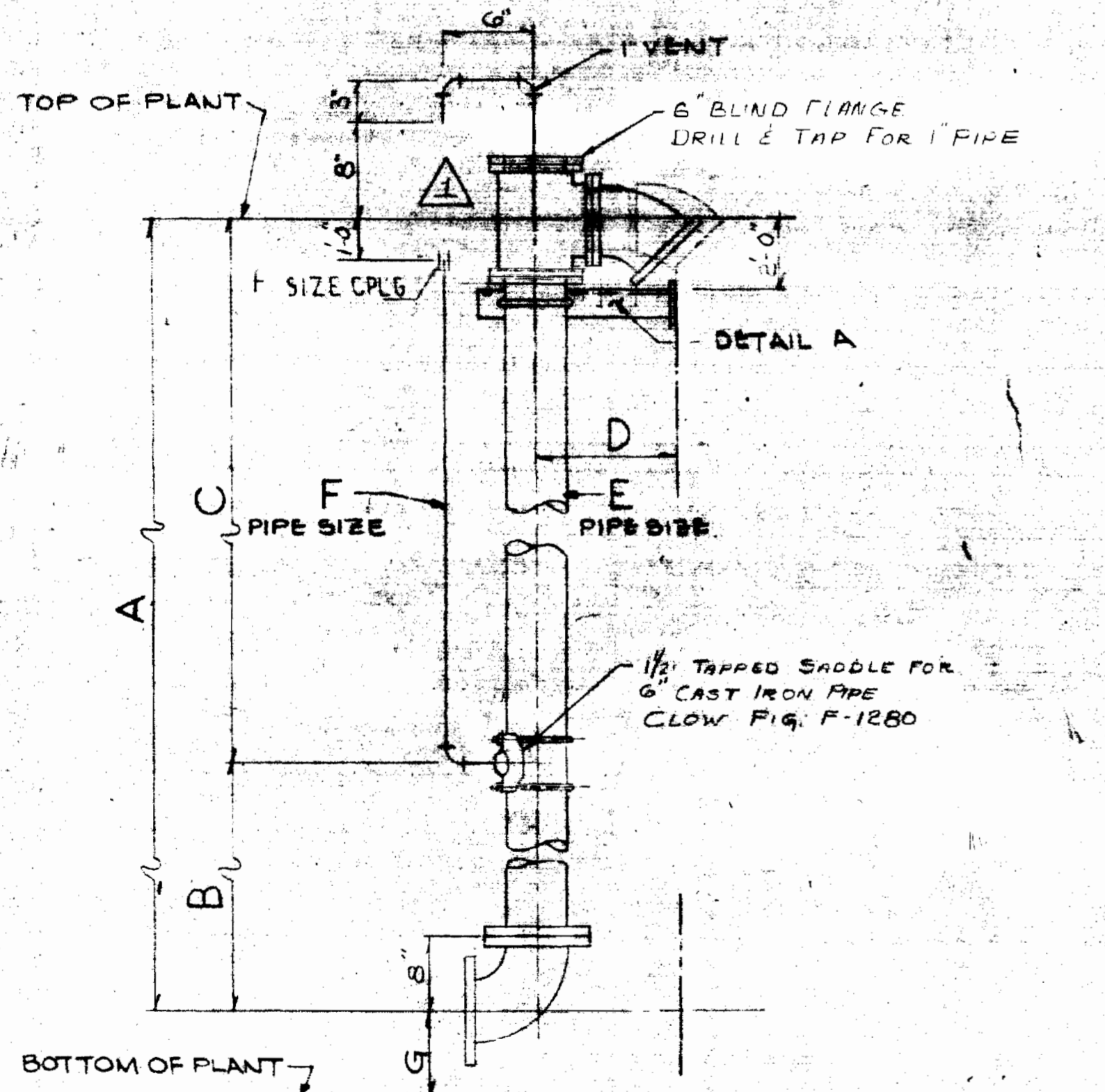
SCALE NONE
DR. APPROVED
SECT. WATER TR.
DATE 2-25-69
WTA: 1023
DRAWING NO. FM-V

ISSUE NO. 3 DATE PRINTED 2/28/69
FOR APPROVAL

ORIENTATION PLAN



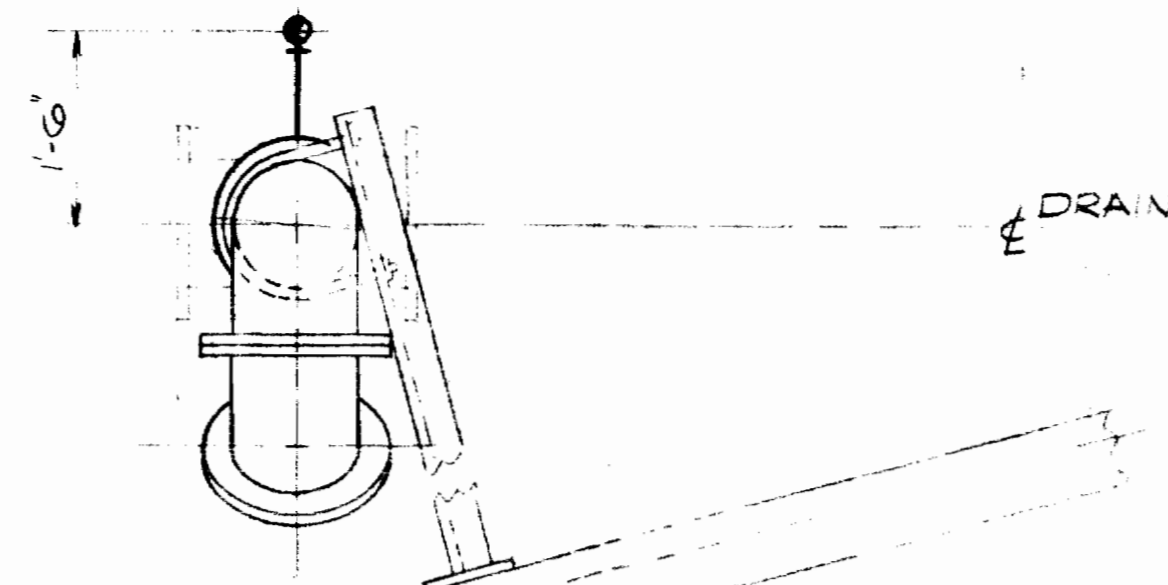
AVERAGE FLOW GPD	A	B	C	D	E	F	G	H	J
30000									
40000									
50000									
70000									
100000									
150000									
2,000,000	16'-0"	1'-6"	14'-6"	1'-6"	6"	1/2"	1'-0"		



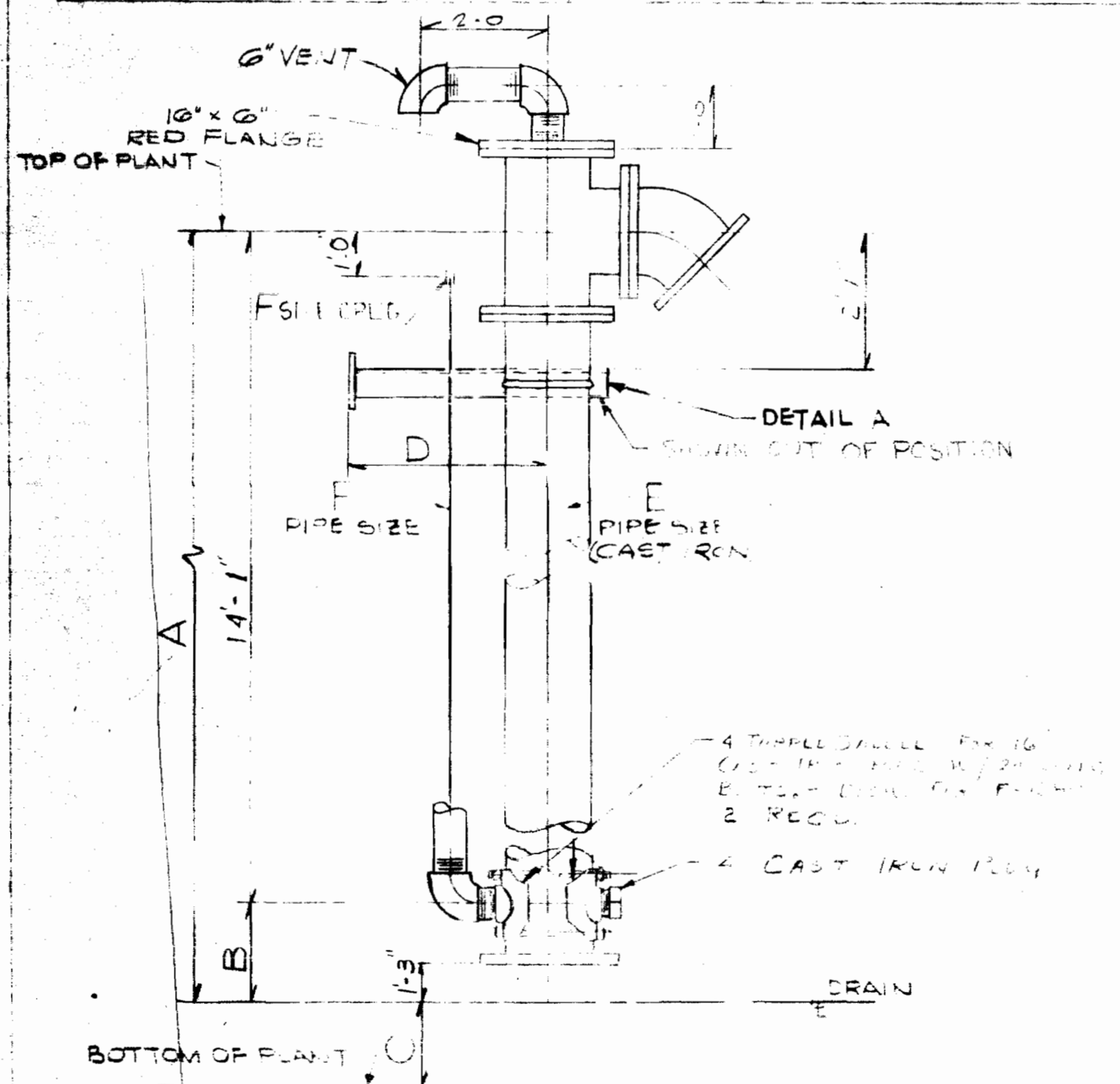
6 WASTE SLUDGE AIRLIFT
MK-W1

MK & TRG. ALL SECTIONS W-1

ORIENTATION PLAN

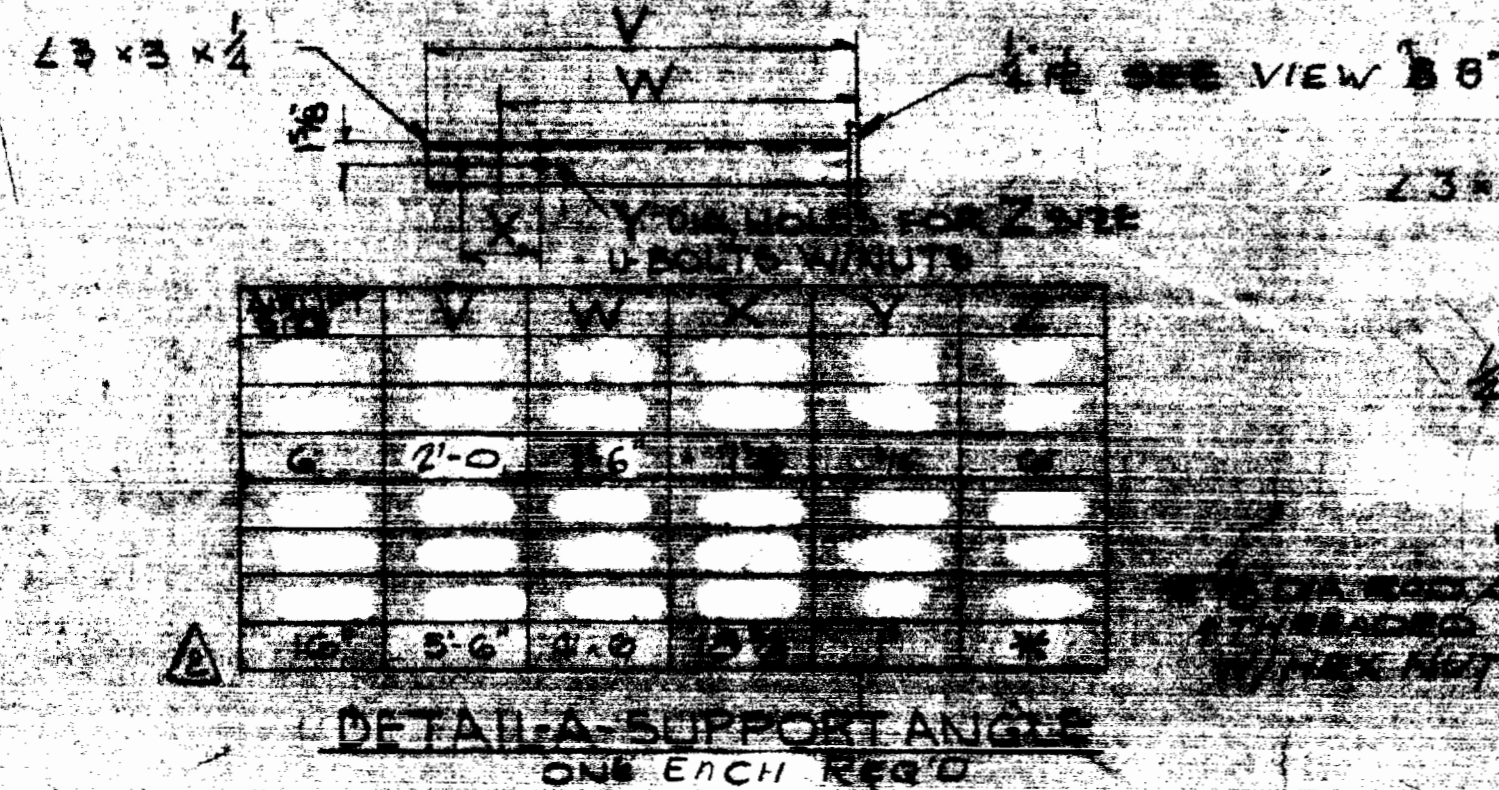


AVERAGE FLOW GPD	A	B	C	D	E	F	G	H
200,000								
250,000								
300,000								
350,000								
400,000								
500,000								
600,000								
750,000								
1,000,000								
1,500,000								
2,000,000	15'-11"	1'-0"	1'-1"	2'-3/4"	16"	4"		

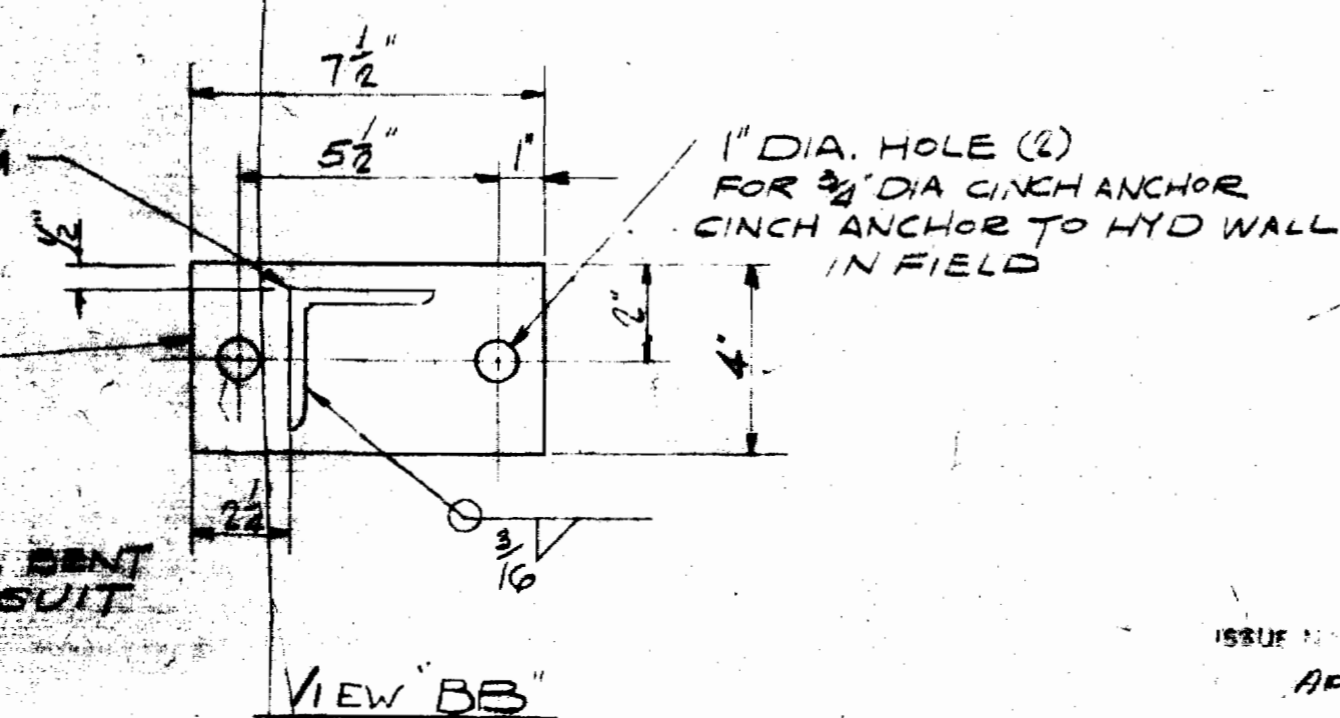


16 RETURN SLUDGE AIRLIFT
MK-W2

MK & TRG. ALL SECTIONS W-2



DETAIL A SUPPORT ANGLE
ONE EACH ROW



VIEW "BB"

- GENERAL NOTES:
- 1 ALL PIPE 4 AND SMALLER TO BE ECH. 40 GALVANIZED.
 - 2 ALL FITTINGS 4 AND SMALLER TO BE 150° M.I. GALV BANDED.
 - 3 ALL AIRLIFT TO BE FIELD ASSEMBLY TO PER THIS DWG.
 - 4 ALL NUTS & BOLTS (GASKETS FOR ASSEMBLY BY DRAGO)

ISSUE NO. 3 DATE PRINTED 2/20/69
APPROVAL

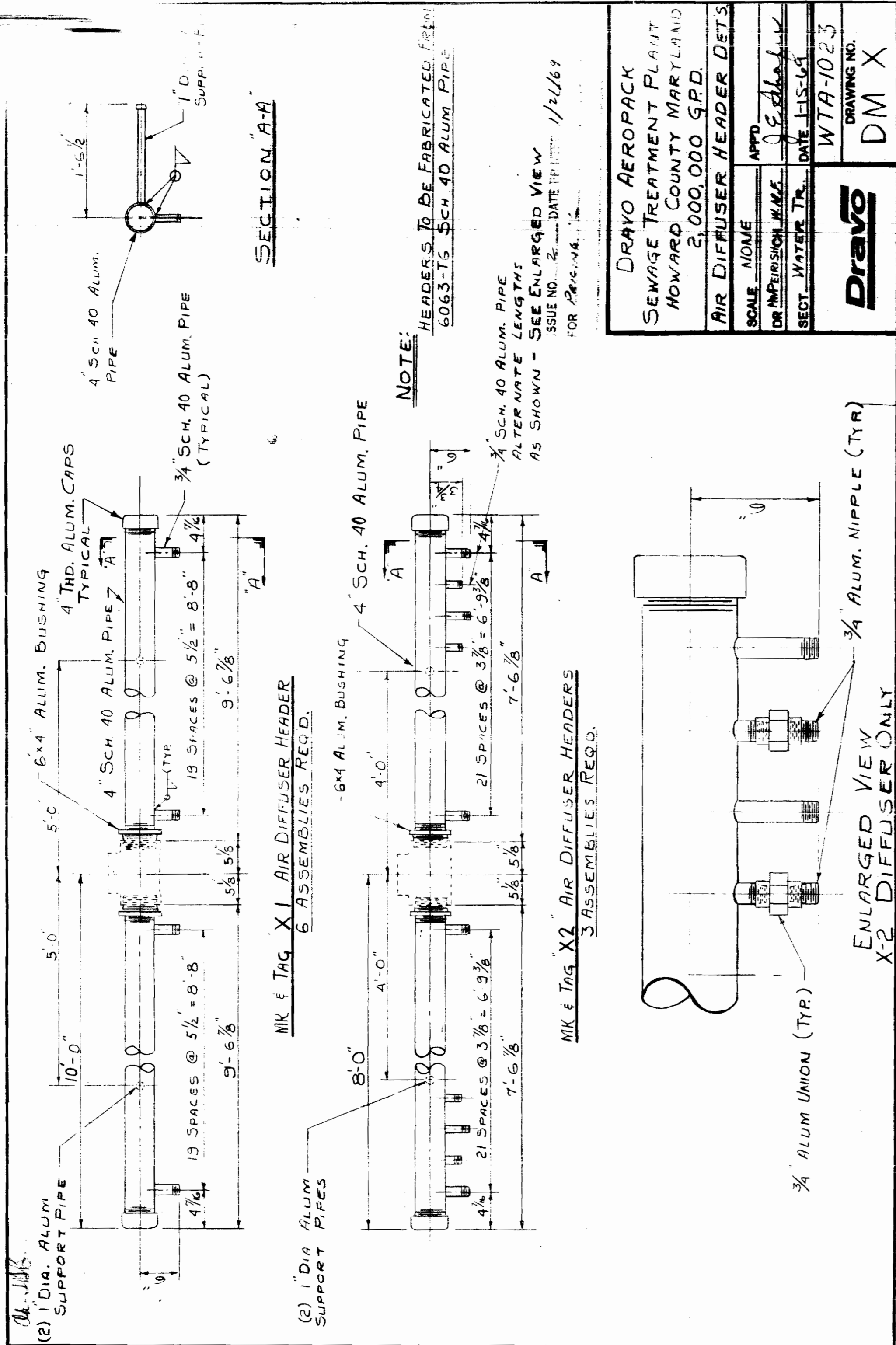
NOTES -
FOR GENERAL NOTES SEE
DWG FM-B

DRAGO AEROPACK
SEWAGE TREATMENT P.
HOWARD COUNTY, MARYL.
2,000,000 GPD

WASTE SLUDGE RETURN SLUDGE

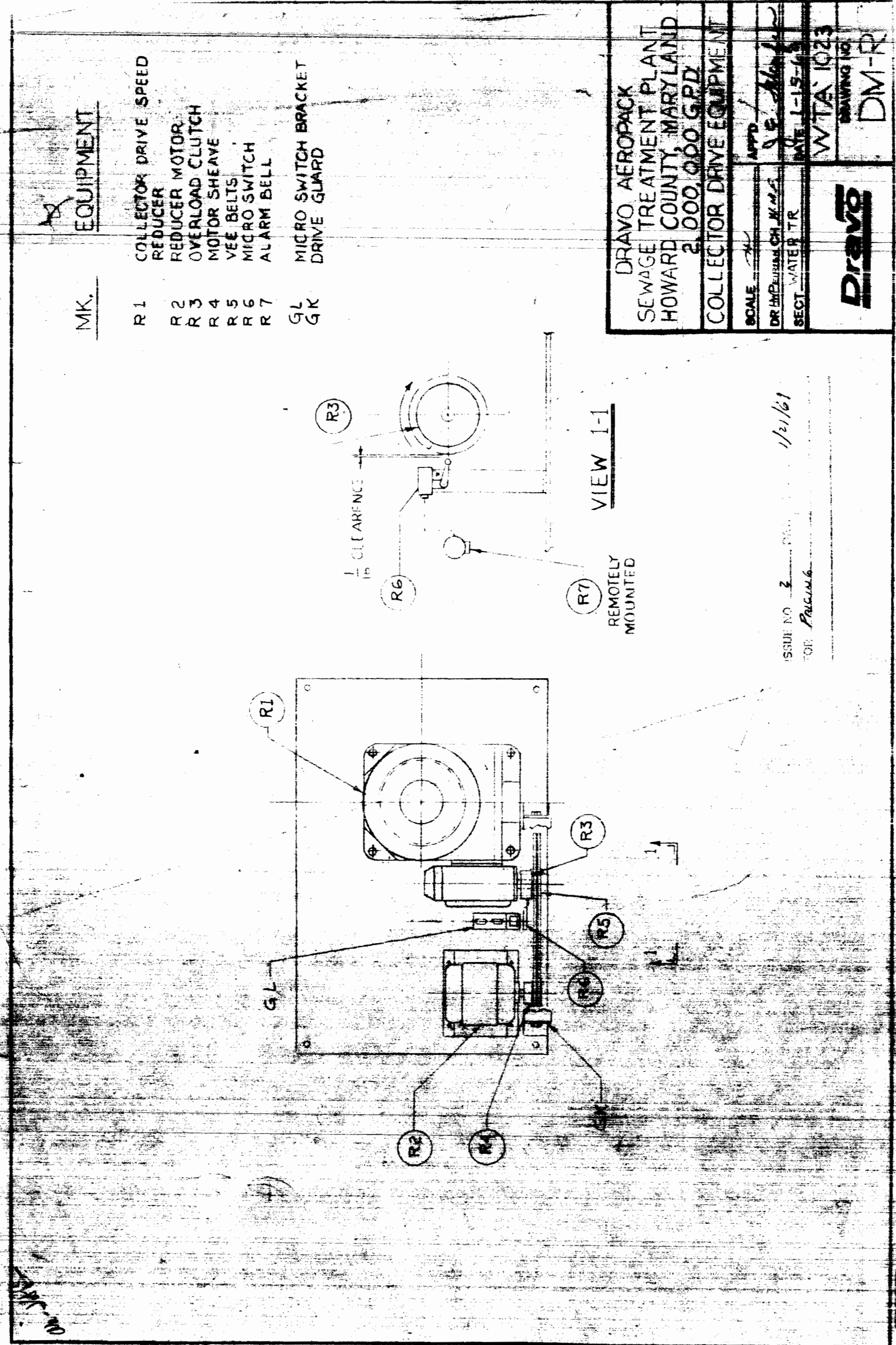
NO.	DATE	DESCRIPTION	BY	CHK	APP'D
1	2-24-69	REVISED MK-W2			
2	1/21/69	ADDED FLANGED TEE TO MK-W2			

DRAGO CORPORATION, PITTSBURGH, PA.

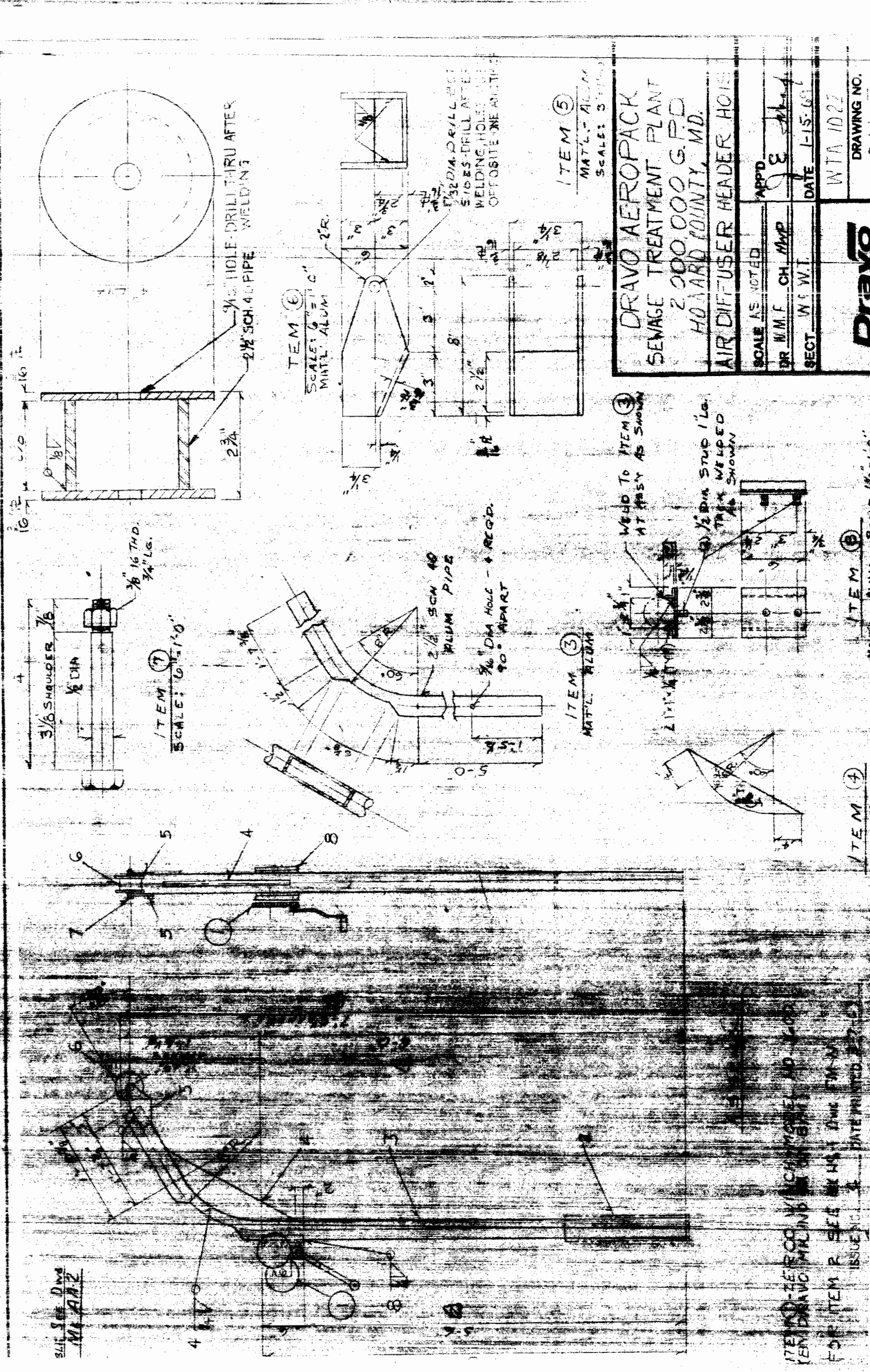


DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE



DES:	
DRN:	
CHK:	



DRAVO AEROPACK
SEWAGE TREATMENT PLANT
2,000,000 G.P.D.
HOWARD COUNTY, MD.

SCALE AS NOTED
BY W.M.F. CH. MAP
DATE 1-15-67

DRAVO AEROPACK
SEWAGE TREATMENT PLANT
2,000,000 G.P.D.
HOWARD COUNTY, MD.

SCALE 1/8" = 1'-0"
SCALE 1/4" = 1'-0"
SCALE 1/2" = 1'-0"
SCALE 3/8" = 1'-0"
SCALE 1/2" = 1'-0"
SCALE 3/4" = 1'-0"
SCALE 1" = 1'-0"

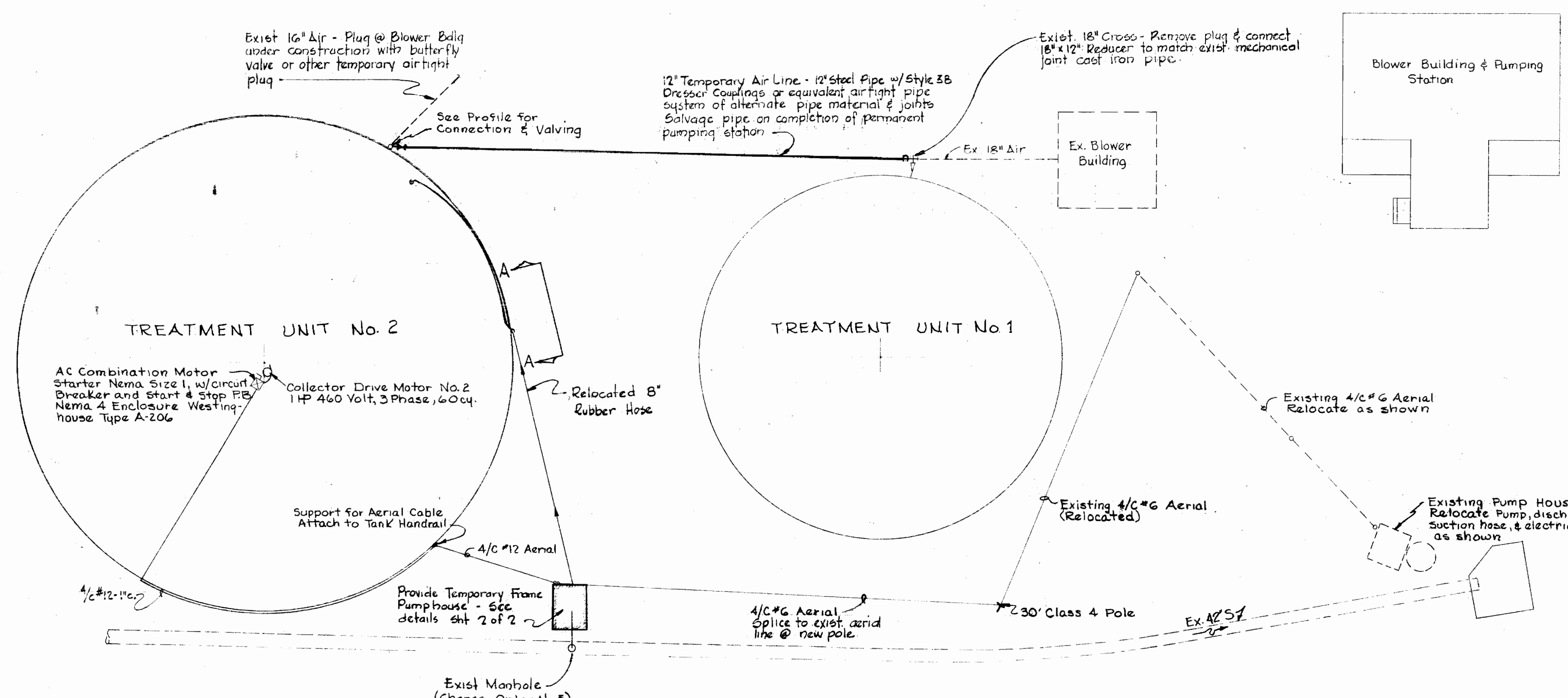
SCALE 1/2" = 1'-0"
SCALE 3/4" = 1'-0"
SCALE 1" = 1'-0"

suspensi

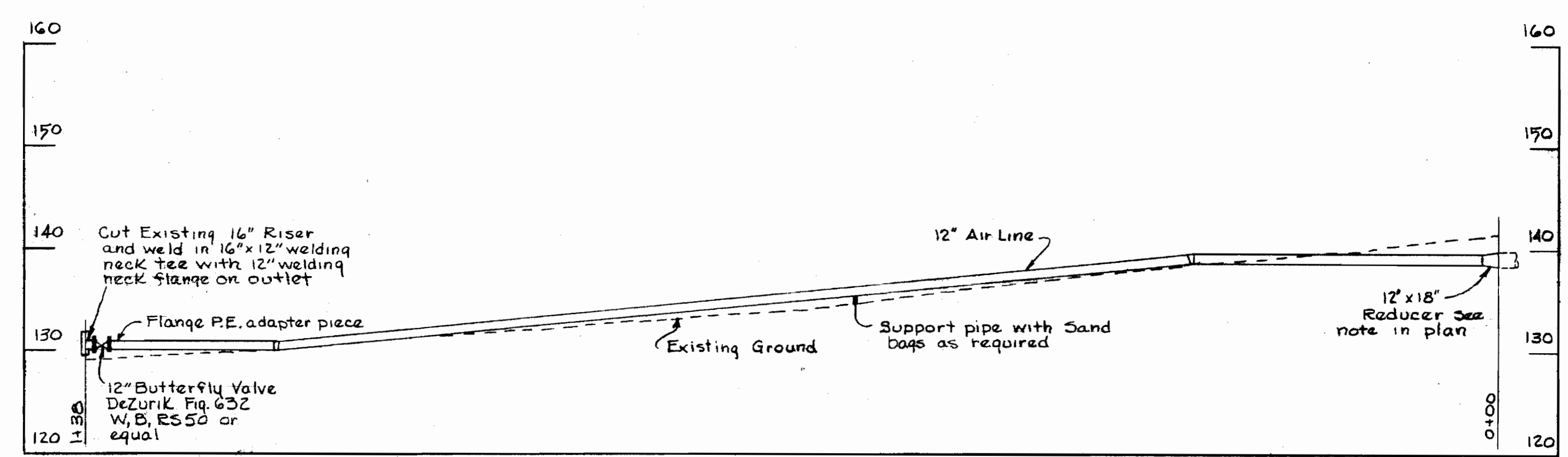
suspensi

suspensi

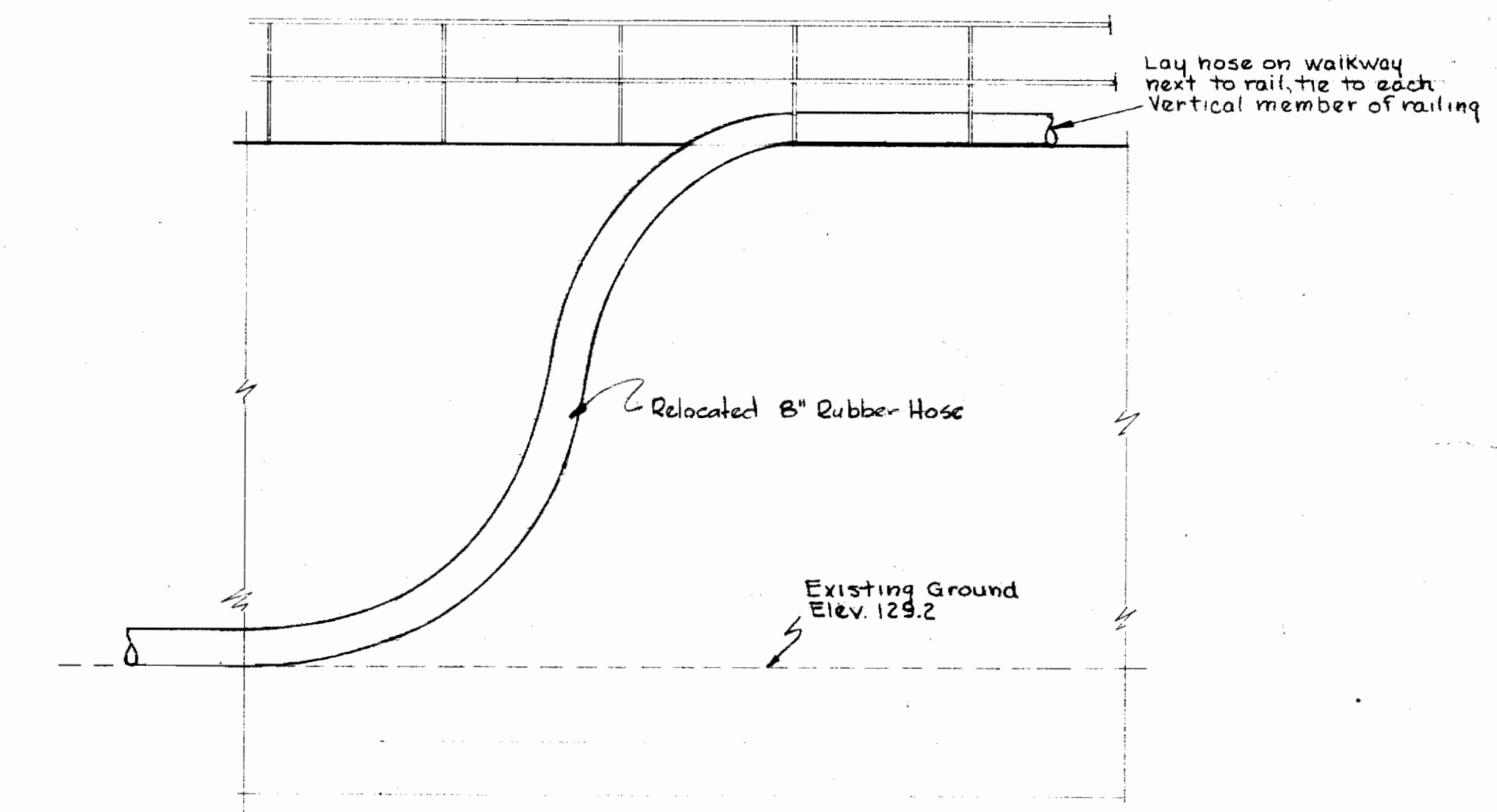
- NOTES:
- 1/ Refer to Contract Dwg 3 of 33 to supplement this Change Order
 - 2/ Pump, control system, and other appurtenances as shown are county furnished & located on the job site in use with Treatment Unit No. 1. They are to be relocated under this change order to be operational with Treatment Unit No. 2.
 - 3/ Pipe & appurtenances for extending exist air line is to be contractor furnished & installed under this change order.
 - 4/ All temporary pumping facilities, air line, etc shall be removed on completion on Contract 237.5. All county owned facilities shall be stored on the job site where directed by the Engineer.



PLAN
Scale: 1" = 20'



PROFILE TEMPORARY 12" AIR LINE
Scale: 1" = 10' Horiz.
1" = 10' Vert.



SECTION A-A
Scale: 1/4" = 1'-0"

WHITMAN, REQUARDT & ASSOCIATES
ENGINEERS
1304 ST. PAUL ST.
BALTIMORE, MARYLAND

HOWARD COUNTY DEPT. OF PUBLIC WORKS
29 Sept 1970
William O. Filbert
Chief, Bureau of Water & Sewer

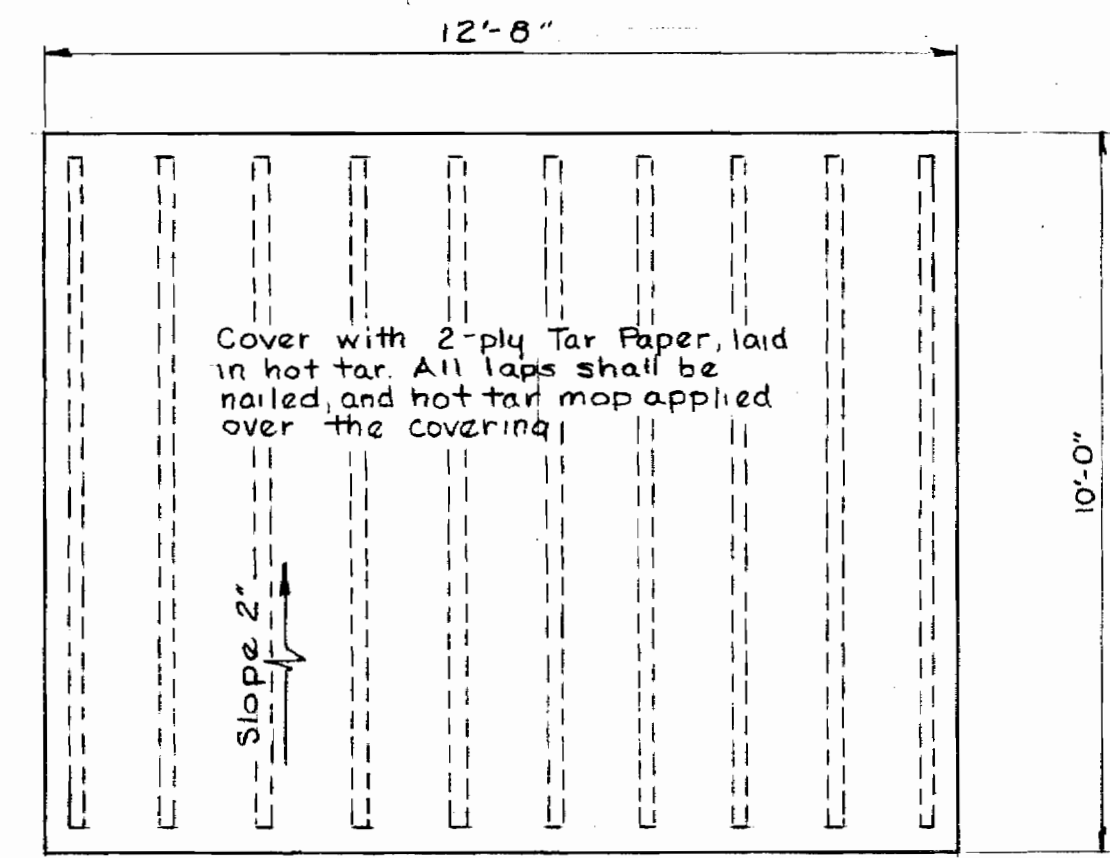
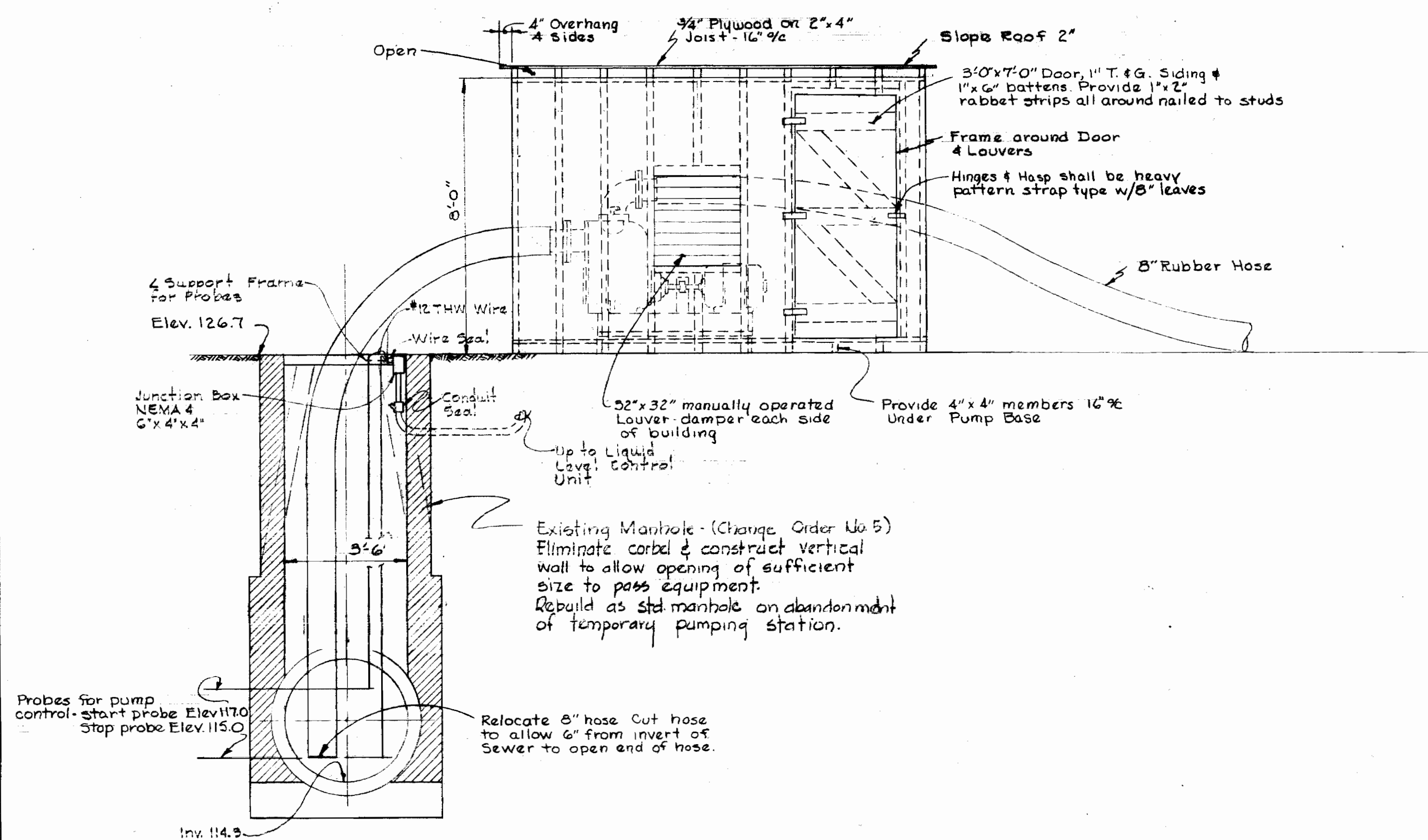
CONTRACT NO. 237.5
CHANGE ORDER NO. 6

PLAN, PROFILE
& DETAILS

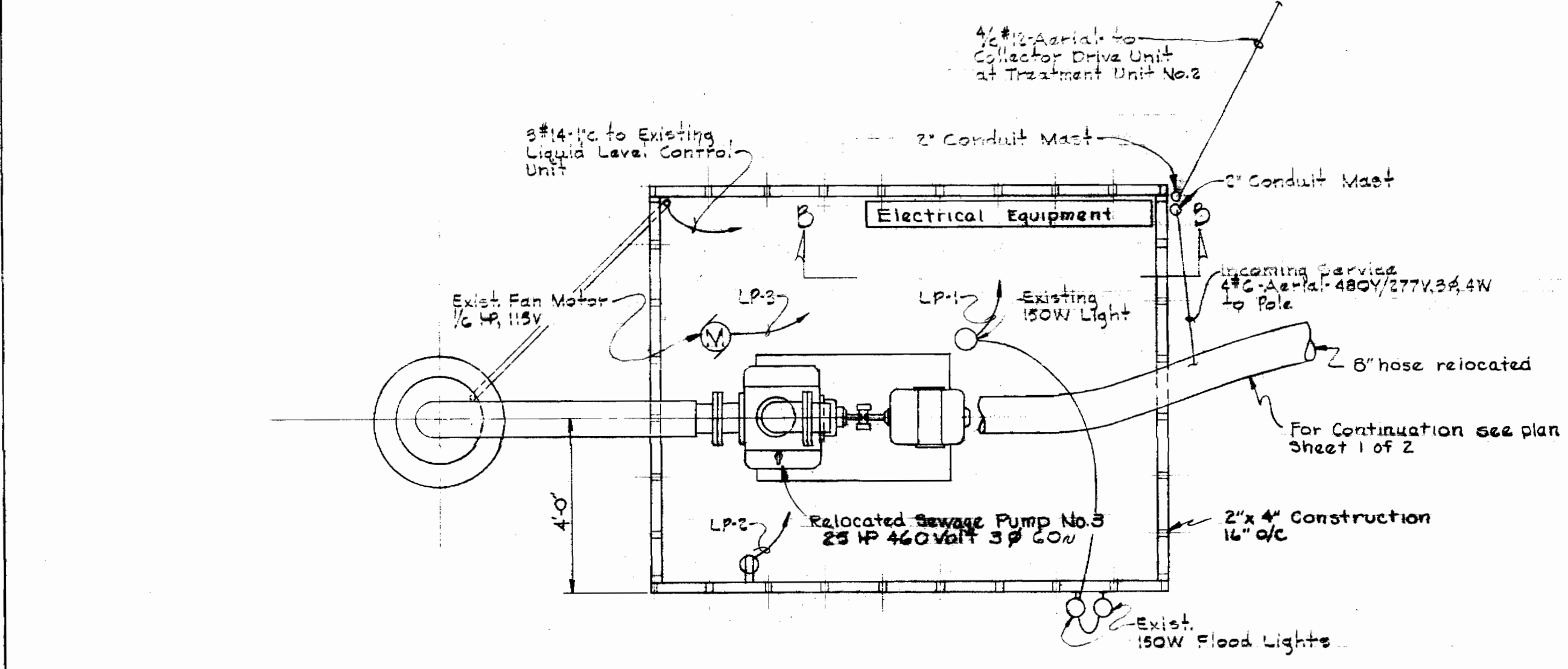
SAVAGE SEWAGE TREATMENT PLANT
TEMPORARY SEWAGE PUMPING & AIR
TRANSMISSION FACILITIES

DRAWING NO. 1 OF 2
SCALE AS SHOWN

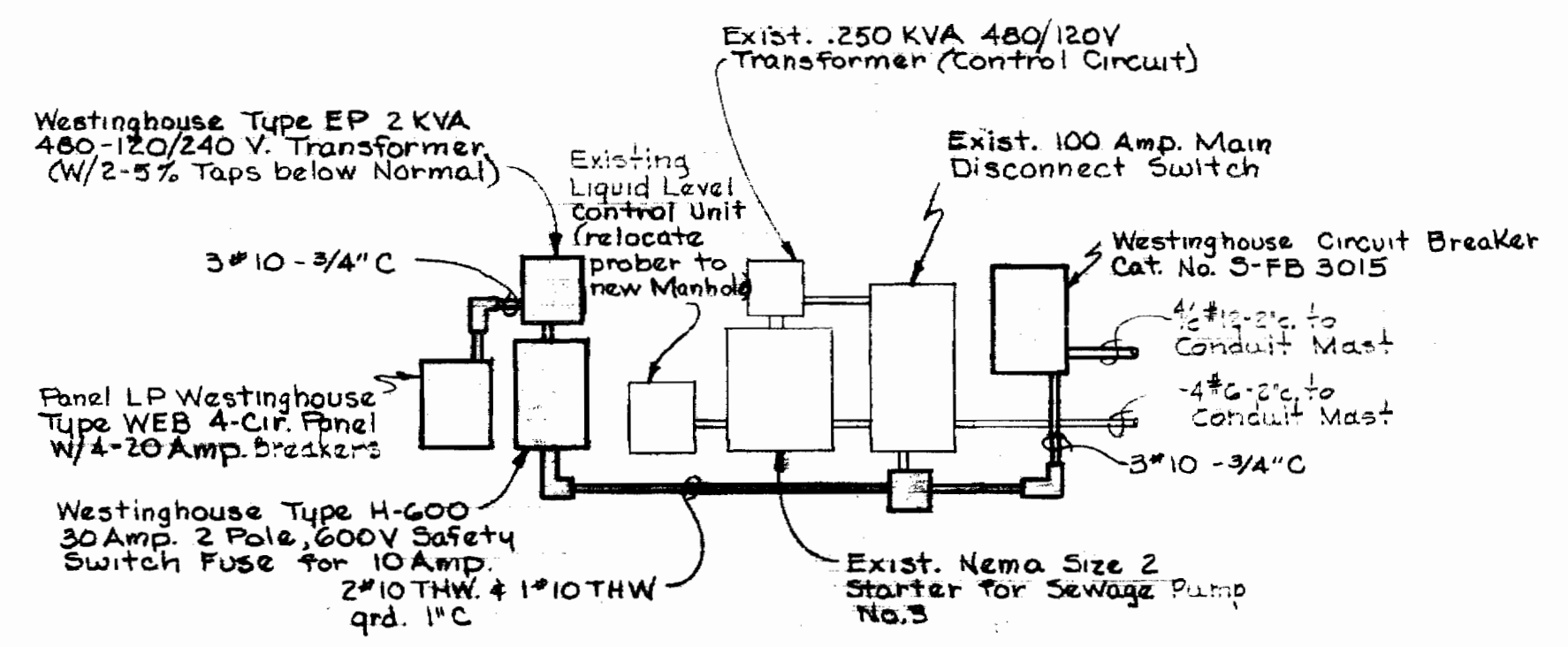
WS 237-5/1



ROOF PLAN
Scale: 3/8" = 1'-0"



PLAN PUMPING HOUSE
Scale: 3/8" = 1'-0"

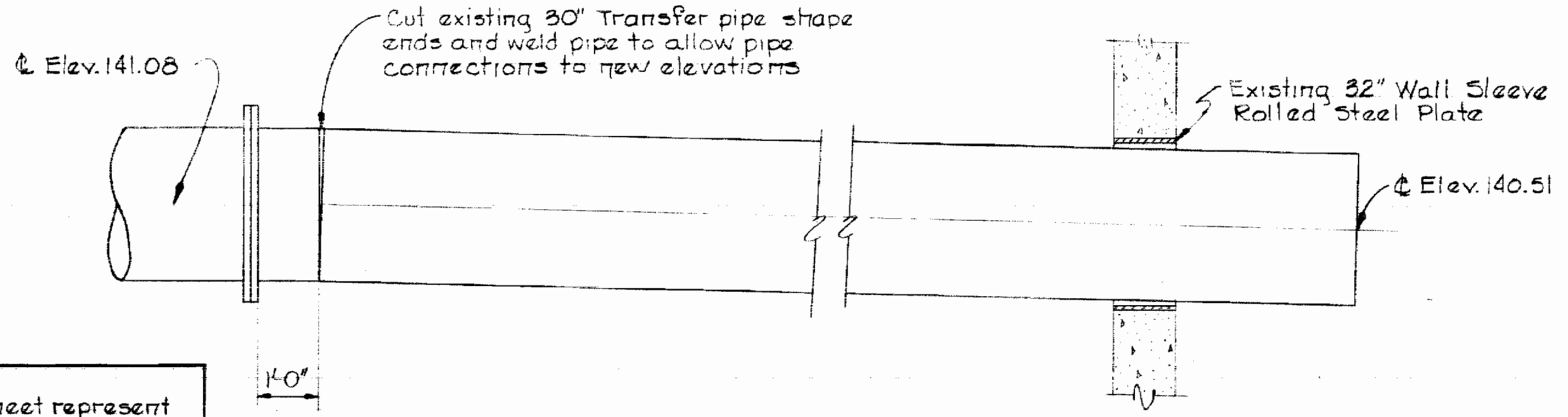
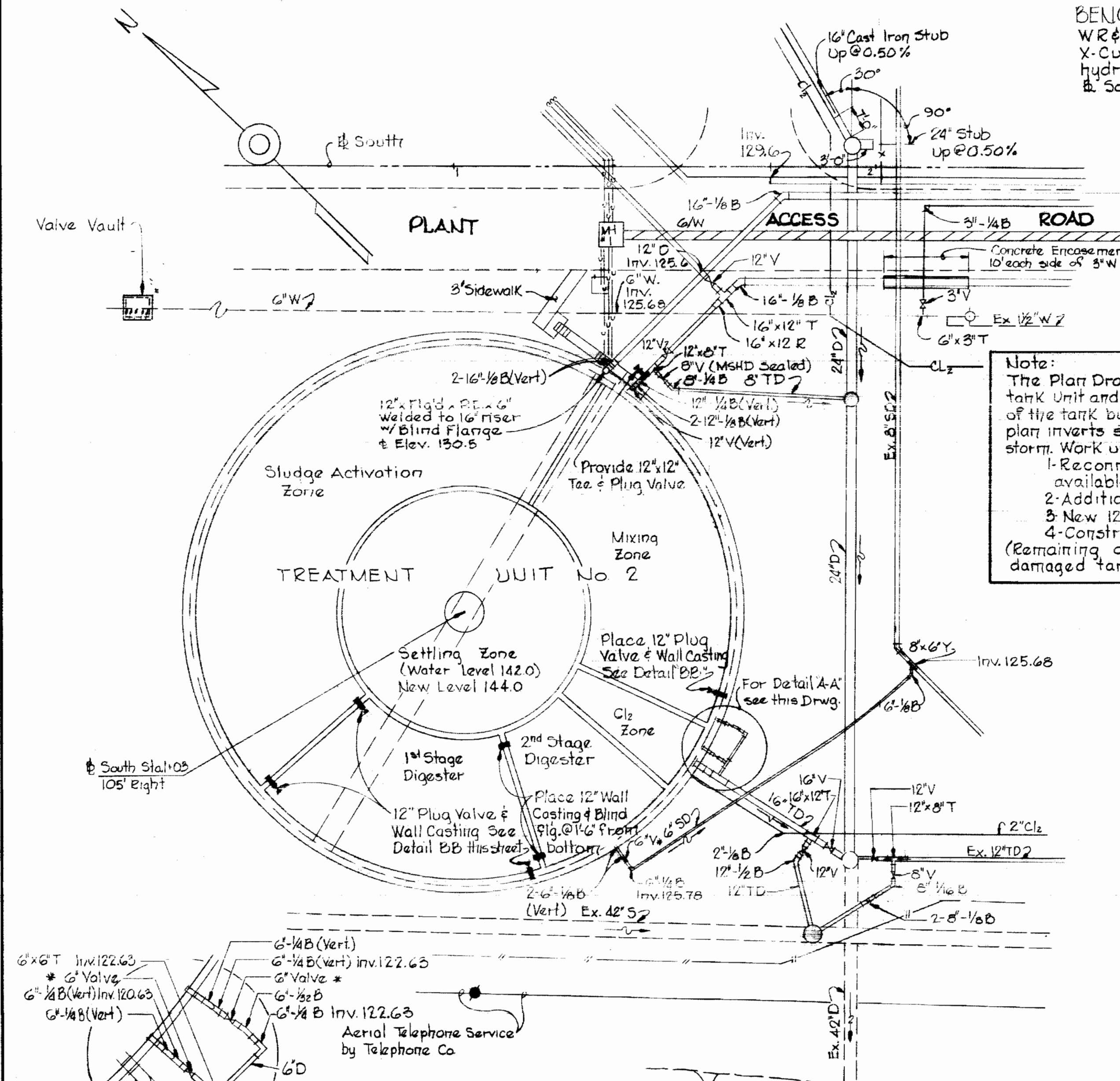


SECTION B-B
Scale: None

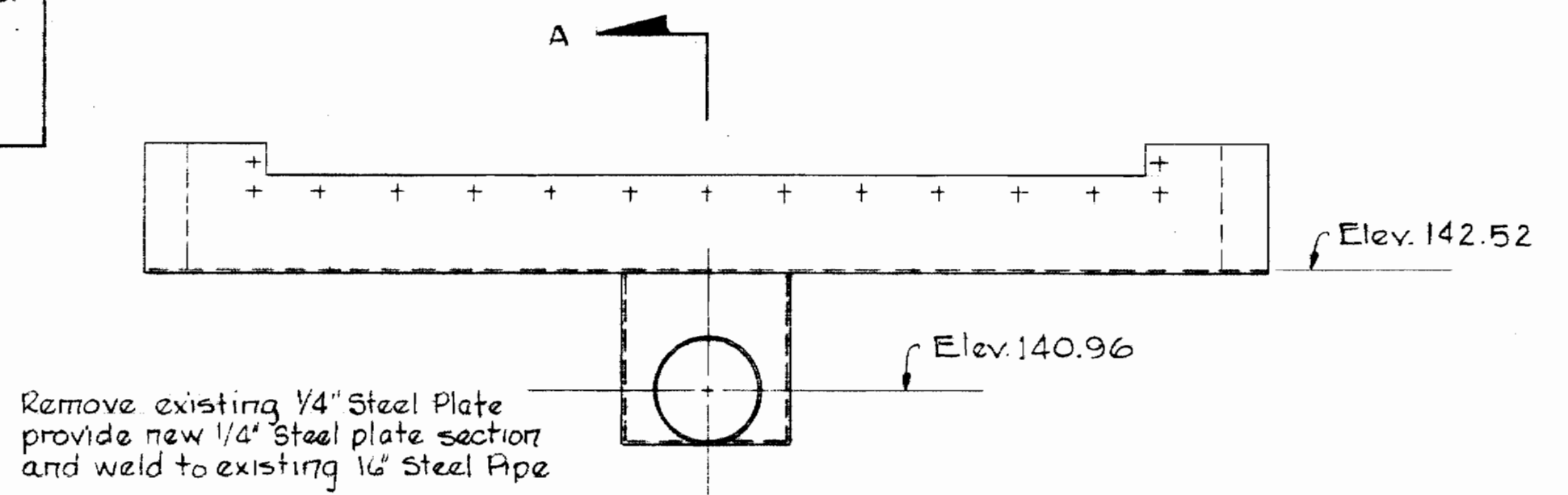
WS 237-S/2

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	HOWARD COUNTY DEPT. OF PUBLIC WORKS 29 Sept 1970 DATE William O. Filbert Chief, Bureau of Water & Sewer	CONTRACT NO. 237 S CHANGE ORDER NO. G	DETAILS	SAVAGE SEWAGE TREATMENT PLANT TEMPORARY SEWAGE PUMPING & AIR TRANSMISSION FACILITIES	DRAWING NO. 2 OF 2	SCALE AS SHOWN
---	---	--	---------	--	--------------------------	----------------------

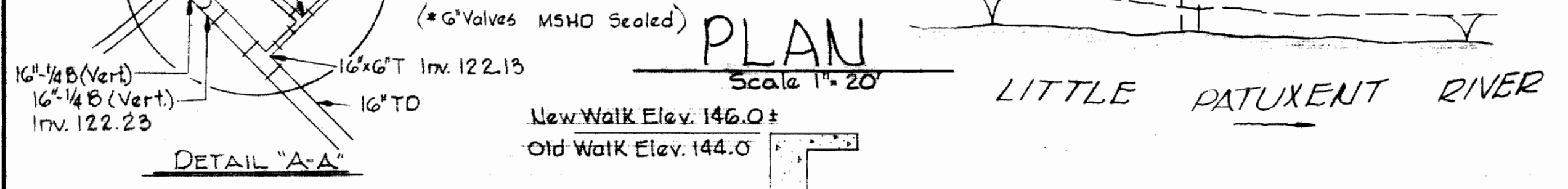
BENCH MARK
 WR&A BM Blaine Elev. 139.04
 X-Cut in Plange bolt on fire hydrant 40' E of Sta. 2+25
 B. South.



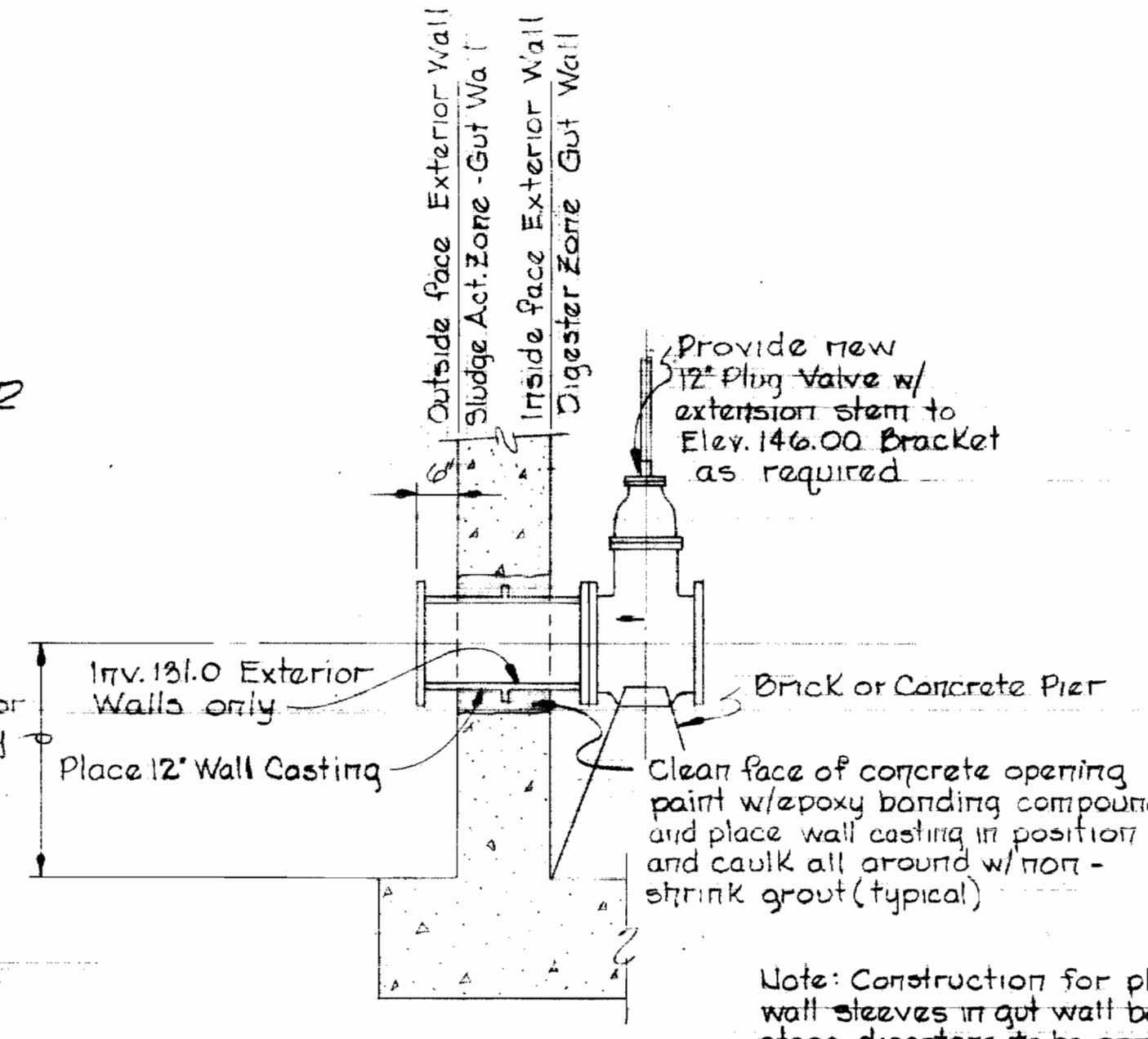
ELEVATION OF 30' TRANSFER PIPE
 Scale: 1/2" = 1'-0"



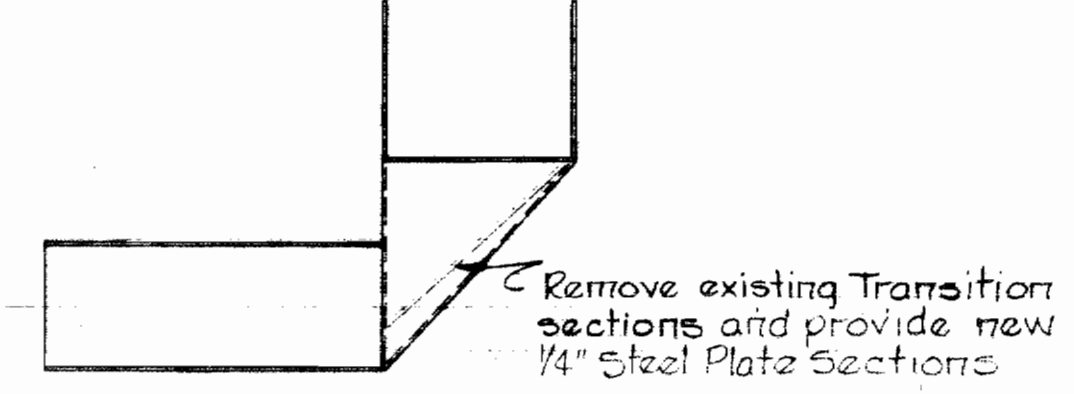
ELEVATION OF EFFLUENT TROUGH
 Scale: 1/2" = 1'-0"



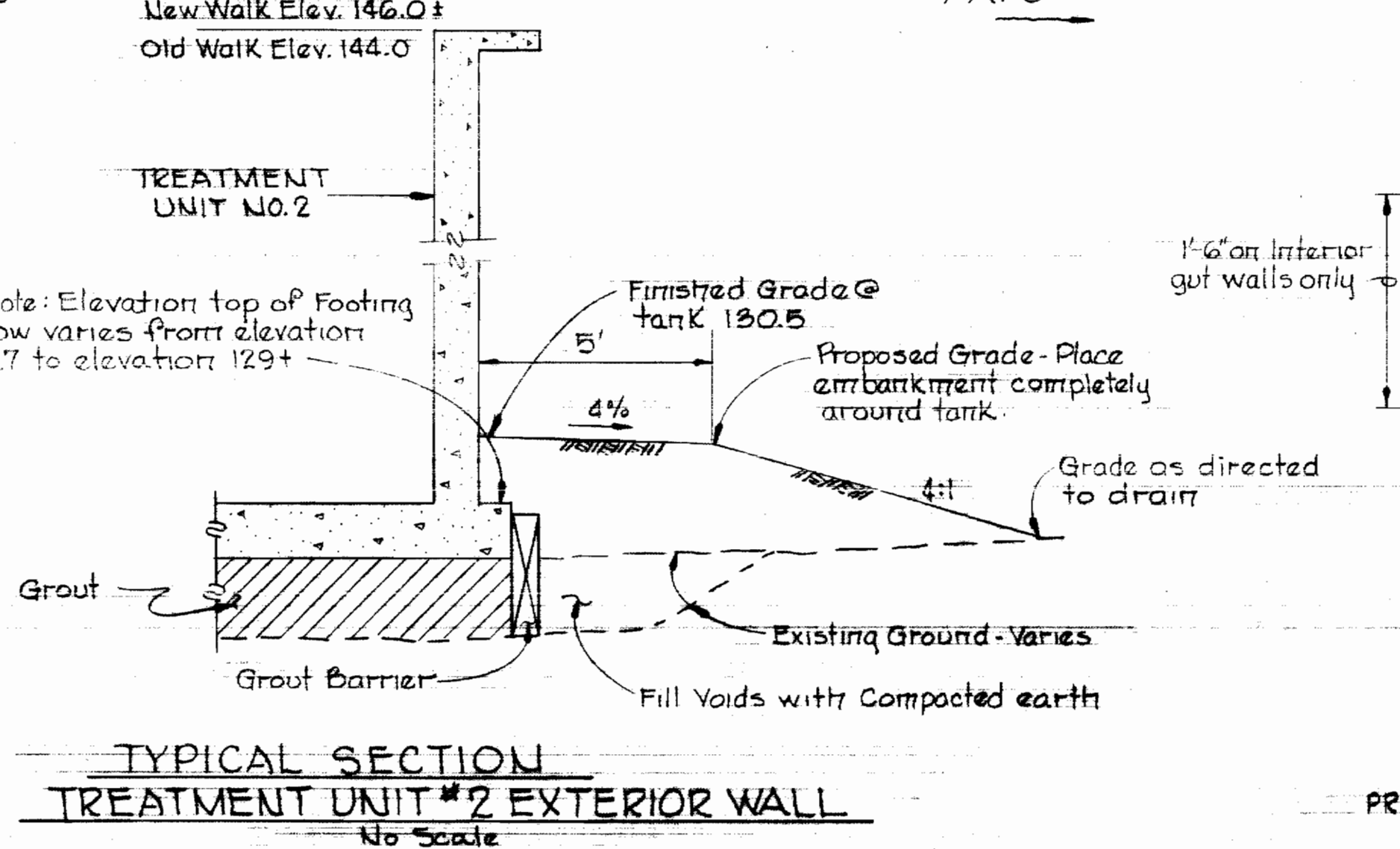
DETAIL "A-A"



DETAIL "B-B"
 Scale: 1/2" = 1'-0"



SECTION "A-A"
 Scale: 1/2" = 1'-0"



TYPICAL SECTION
TREATMENT UNIT #2 EXTERIOR WALL
 No Scale

PREPARED FOR U.S. ARMY CORPS OF ENGINEERS

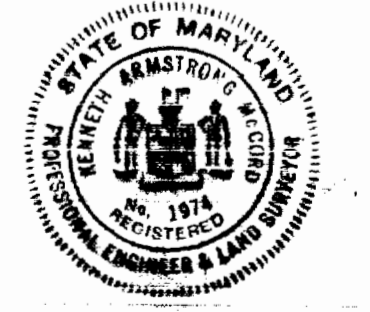
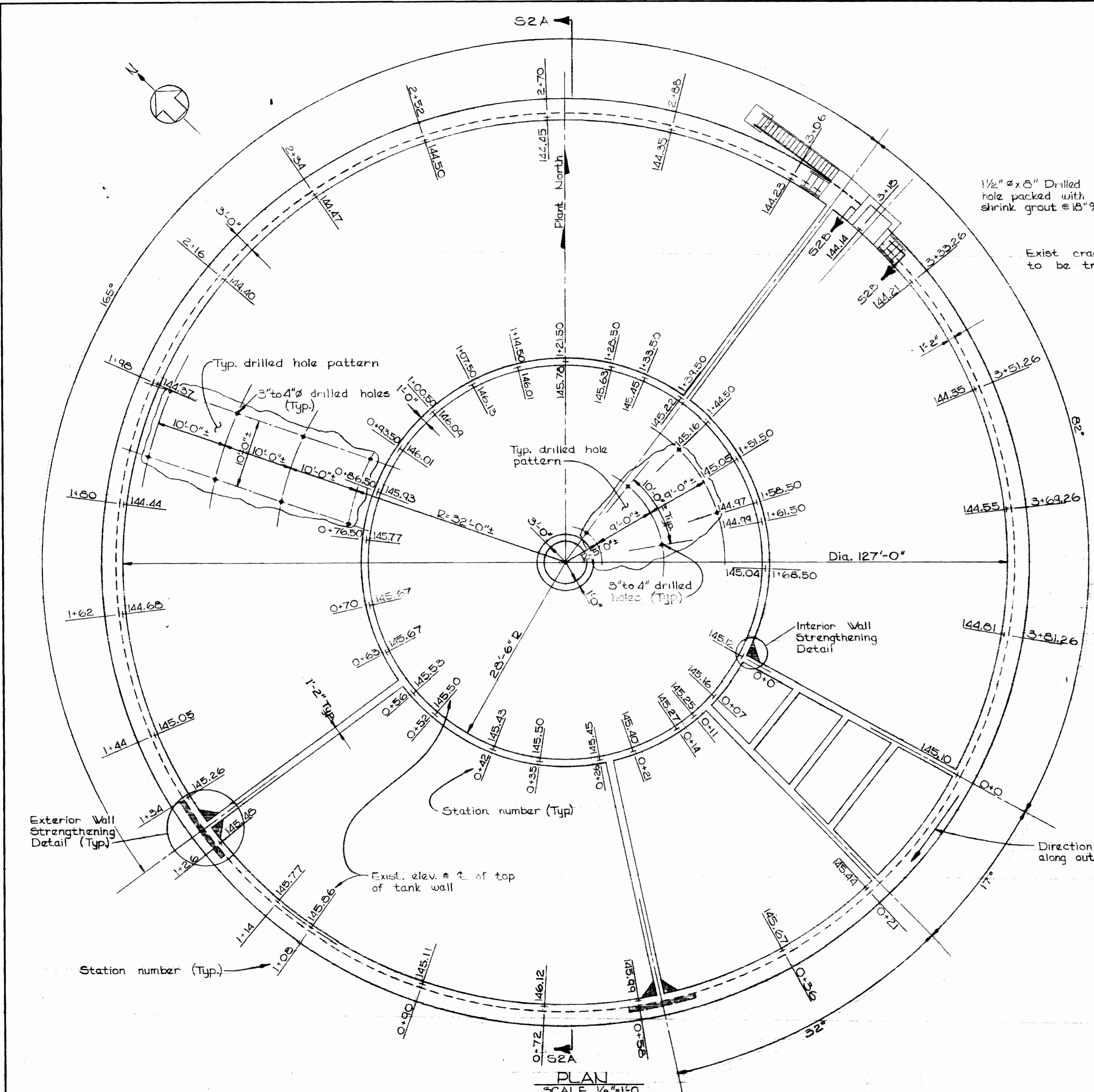


Kenneth A. Meland

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>W.O. Falbot</i> CHIEF - BUREAU OF WATER AND SEWER	CONTRACT NO. _____ SITE PLAN AND DETAILS	SAVAGE WASTEWATER TREATMENT PLAN REPAIR OF TREATMENT UNIT NO. 2	DRAWING NO. 1 OF 3	SCALE AS SHOWN
				W. O. 6681-2	MI August 11, 1972

NS 237-S/1

237-S/2



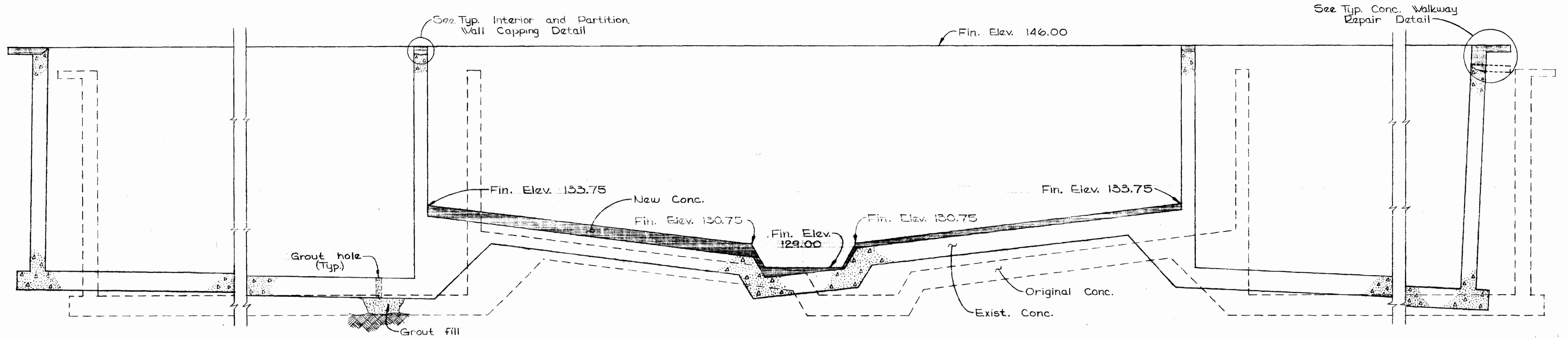
Kenneth M. Land

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 	CONTRACT NO. _____	PLAN AND DETAILS	SAVAGE WASTEWATER TREATMENT PLANT REPAIR OF TREATMENT UNIT NO 2	DRAWING NO. <u>2</u> OF <u>3</u> SCALE AS SHOWN
---	---	--------------------	------------------	--	---

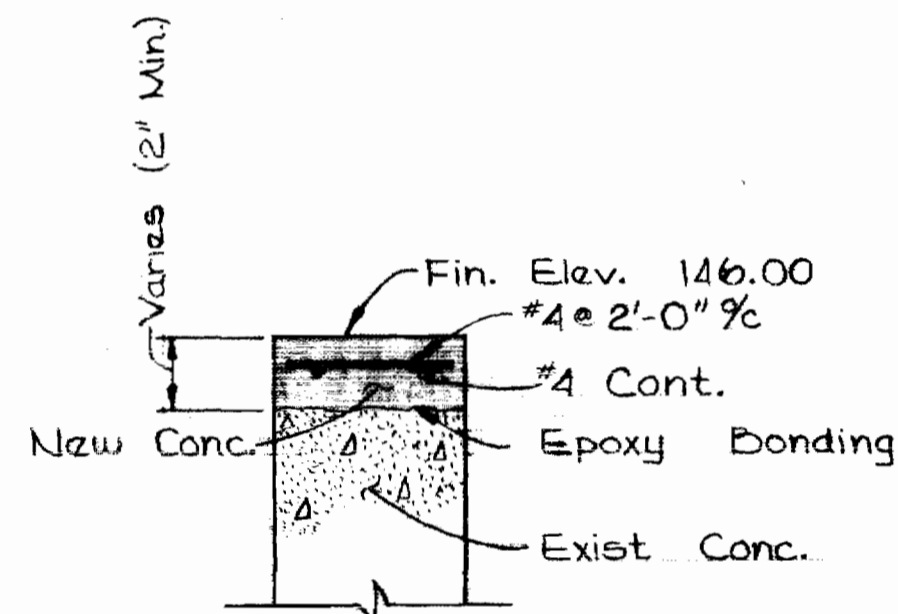
W.O. 6601-2

August 11, 1972

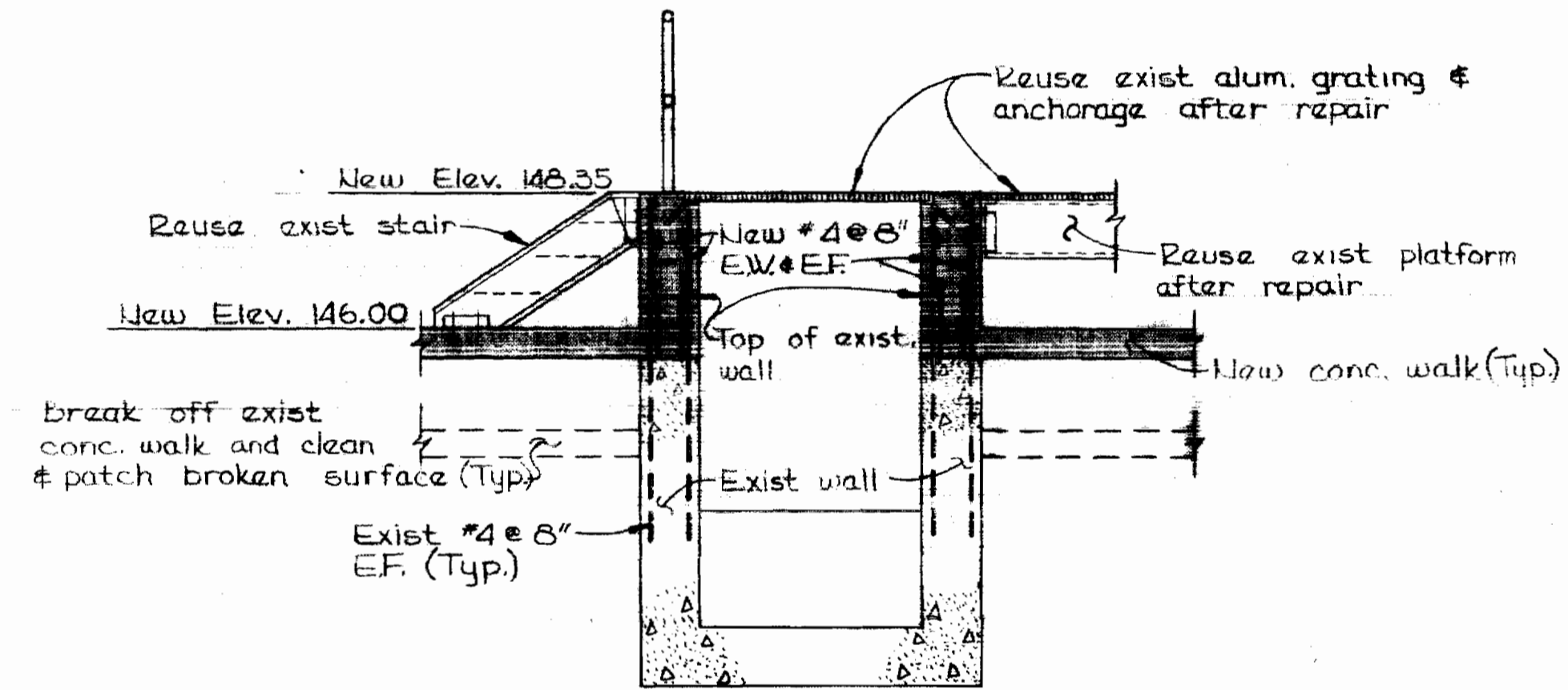
237-S



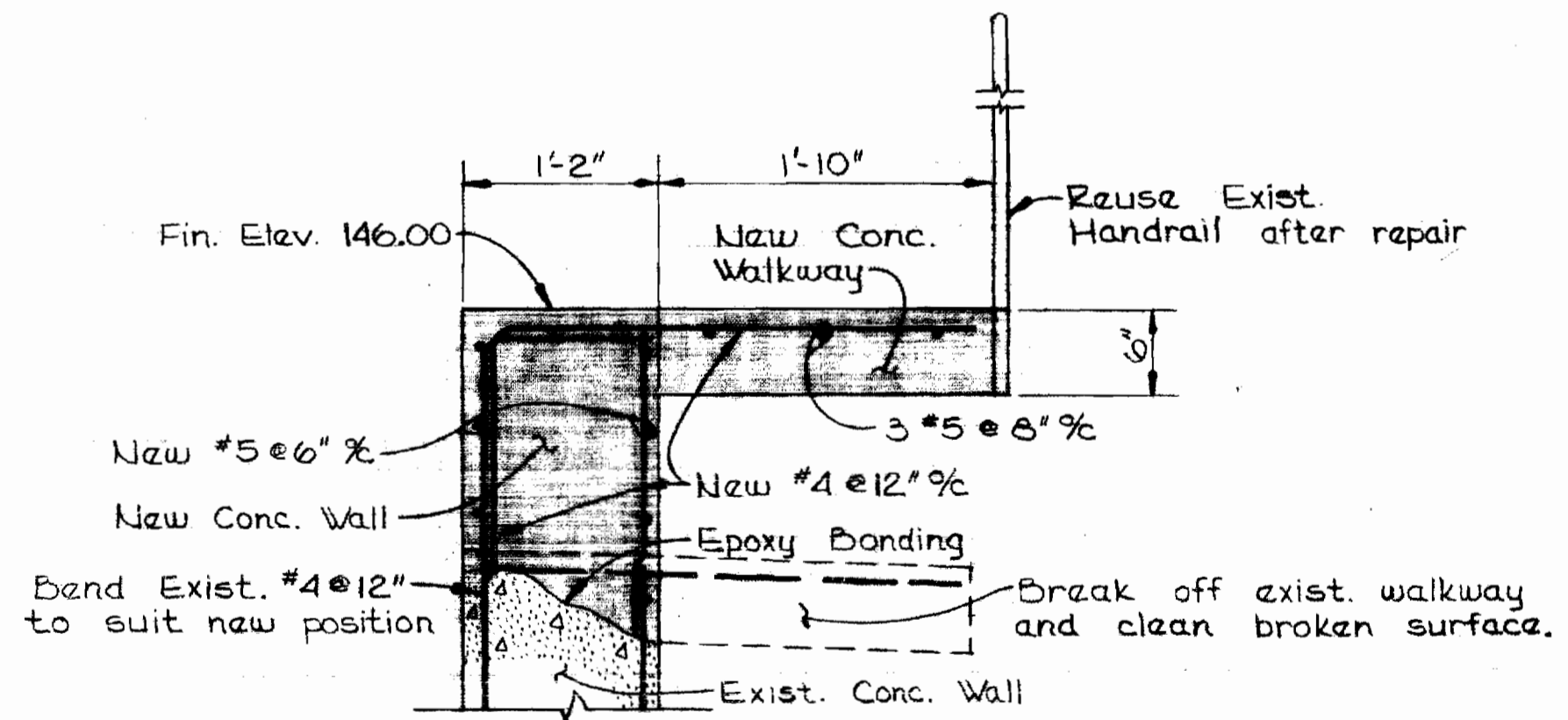
SECTION S2A
SCALE 1/4"=1'-0" S1



TYPICAL INTERIOR & PARTITION
WALL CAPPING DETAIL
SCALE 1"=1'-0"



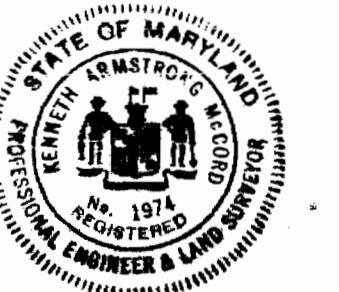
SECTION S2B
SCALE 3/8"=1'-0" S1



TYPICAL CONCRETE WALKWAY
REPAIR DETAIL
SCALE 1"=1'-0"

NOTES

1. ALL CAST IN PLACE CONCRETE SHALL HAVE A MINIMUM 28 DAY STRENGTH OF 3,000 P.S.I. SEE SPECIFICATIONS FOR OTHER REQUIREMENTS. REINFORCING BARS SHALL BE ASTM 615-68 GRADE 40.
2. REINFORCED CONCRETE SHALL BE DETAILED AND CONSTRUCTED IN ACCORDANCE WITH ACI CODE 318-63. CONCRETE HAS BEEN DESIGNED BY THE WORKING STRESS METHOD.
3. ALL REINFORCING BAR LAPS, SHALL BE A MINIMUM OF 30 BAR DIAMETERS.
4. A MINIMUM PERIOD OF 36 HOURS SHALL ELAPSE BETWEEN ADJACENT CONCRETE POURS.
5. CONCRETE COVER FOR ALL REINFORCING BARS SHALL BE 2 INCHES.
6. ALL EXISTING CONCRETE SURFACES IN CONTACT WITH NEW CONCRETE, SHALL BE CLEANED WITH POWERED STEEL BRUSH LOOSE PARTICLES BLOWN OFF WITH COMPRESSED AIR, AND A COAT OF EPOXY BONDING COMPOUND APPLIED BEFORE POURING NEW CONCRETE.
7. EXTERIOR AND INTERIOR TANK WALLS SHALL BE CAPPED WITH NEW CONCRETE TO ELEVATION 146.00.
8. MINIMUM THICKNESS OF CONCRETE SHALL BE 2 INCHES. NO FEATHER EDGING WILL BE ALLOWED. BREAK OFF EXISTING CONCRETE IF NECESSARY TO ACHIEVE 2 INCH MINIMUM THICKNESS.
9. INTERIOR TANK BASE SLAB SHALL BE FILLED WITH CONCRETE TO SUIT NEW ELEVATIONS SHOWN.
10. ALL CRACKS ON CONCRETE SURFACES OF WALL AND BASE SLAB SHALL BE TREATED AS SPECIFIED.
11. ALL VOIDS UNDER TANK BASE SLAB SHALL BE GROUTED THROUGH DRILLED HOLES AS SHOWN. SEE SPECIFICATIONS FOR DETAILED REQUIREMENTS.



Kenneth A. Meland

WHITMAN, REQUARDT & ASSOCIATES ENGINEERS 1304 ST. PAUL ST. BALTIMORE, MARYLAND	DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>W.O. Llobet</i> CHIEF - BUREAU OF WATER AND SEWER	CONTRACT NO. _____	SECTION AND DETAILS	SAVAGE WASTEWATER TREATMENT PLANT REPAIR OF TREATMENT UNIT NO. 2	DRAWING NO. 3 OF 3	SCALE AS SHOWN
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237-5/3

DRAWING 44-510 14776